TECHNICAL MANUAL

SD425 KEYBOARD AND SD426 DATA DISPLAY

Scientific Atlanta
Spectral Dynamics Division

MP MASTER
MA29900

SERIAL _____

TECHNICAL MANUAL

SD425 KEYBOARD AND SD426 DATA DISPLAY

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SD425 Keyboard and SD426 Data Display

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PREFACE

This manual is divided into two segments. The first addresses the SD425 Keyboard and the second the SD426 Data Display. Each segment is divided into sections dealing with installation of the equipment, explanation of controls and operation, a condensed concept of operation section, and identifying data for selected components. Schematic diagrams are provided for information only. They are reproductions of the OEM schematic diagrams and are included in this manual to augment the user's overall comprehension of system operation. The troubleshooting procedures in the SD426 segment are reproduced from the OEM manual of Nippon Electric Company and are presented to enable the performance of corrective maintenance in emergency situations. Individual sections of this manual address the normal procedures to follow in the event of hardware failure in either system.

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SEGMENT ONE
SD425 KEYBOARD

Section I

General Information

A1-1 INTRODUCTION

This technical manual, as noted in the Preface, is divided into two major segments. This segment, the "A" portion of the manual, deals with the unpacking, installation, operation and special use features of the SD425 Keyboard. Section A2 addresses the steps related to equipment installation, and Section A3 deals with operation and use.

Extensive troubleshooting procedures and corrective maintenance are not addressed. In the event of hardware failure in the SD425 Keyboard, the unit should be returned to the nearest service facility of Scientific-Atlanta for repair/turnaround.

The typical system with which the SD425 and SD426 is associated is shown in block diagram form in Figure A1-1. Refer to the applicable SD1201 series manuals for specific system operating procedures.

A1-2 SPECIFICATIONS

Data Rate:

600 Baud

Interface:

Serial, asynchronous modified EIA RS232C, (negative logic, TTL −5 volts to ground), full duplex

Parity:

None

Operating Environment:

5° to 41° C (41° to 105°F)

Relative Humidity:

5% to 95% non-condensing

A1-3 SYSTEM INTERFACE(s)

Figure A1-1 shows a typical interface with the SD425/426 and the Model 13414 Real Time Display card. In the 1201 series Digital Vibration Control Systems, the Real Time Display (RTD), consisting of a single PWA card connected to a DEC Unibus, performs the primary function of formatting real time data for presentation on the video display (in this instance, an SD426). The system shown below may also be connected with a stand alone terminal at J2. In this case, the SD425 must be disconnected. (A typical stand alone terminal is the SD421).

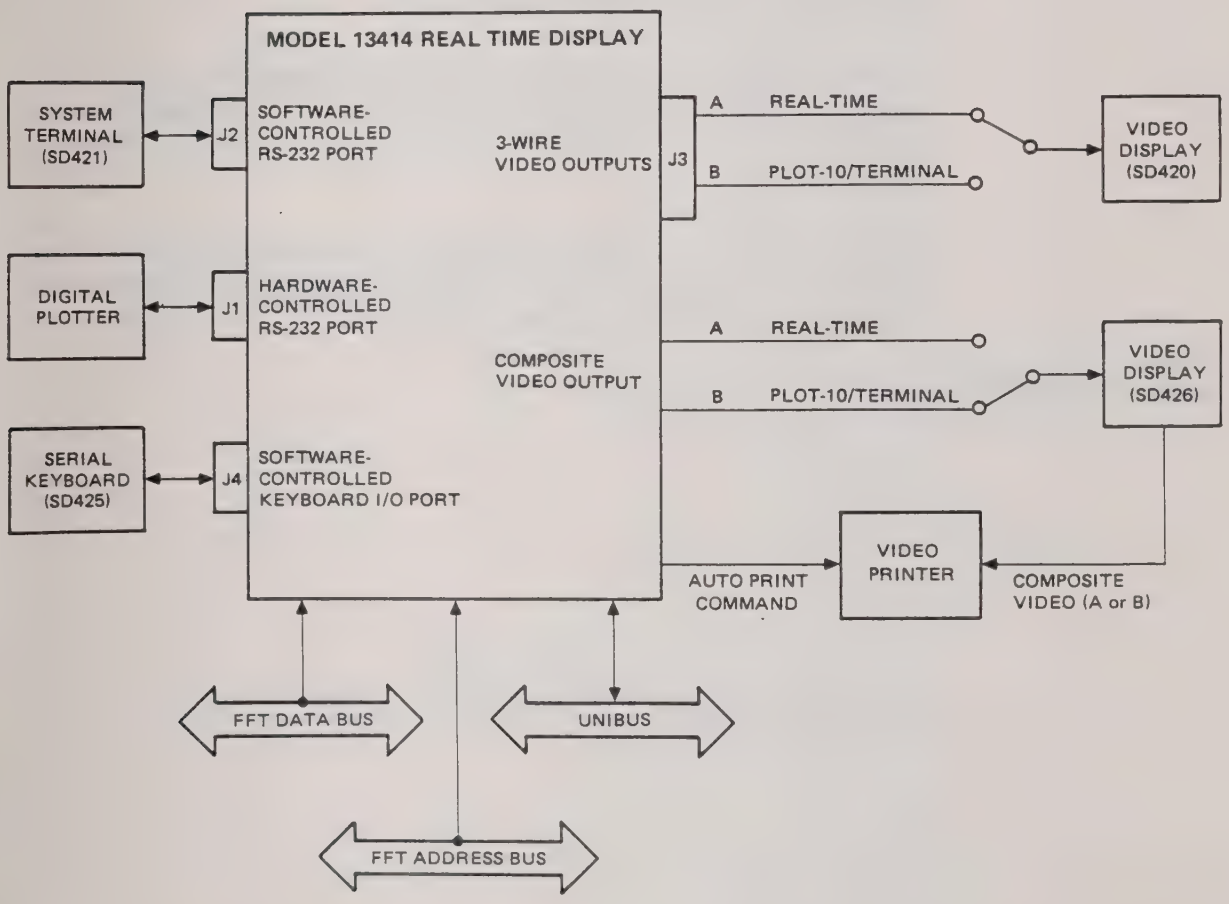


Figure A1-1. SD425/426 — Typical System Interface with the Model 13414 Real Time Display Card (RTD)

Section II

Installation

A2-1 INTRODUCTION

This section contains procedures for initial inspection, safety precautions, and installation steps for preparation for use. Shipping damage, in-warranty repairs, and methods for re-packing the instrument for shipment are also discussed.

A2-2 INITIAL INSPECTION

A2-2.1 Unpacking

No special tools or procedures are required for unpacking the SD425, however, care must be taken when handling the keyboard so as not to drop or otherwise cause damage to the unit. Conduct an inventory of all items listed on the packing list supplied with the shipping container. In the event of any shortage, or if shipping damage is apparent, file a claim with the carrier claims agent and forward a copy to Scientific-Atlanta. Save the packing and shipping container for possible reshipment of the equipment.

A2-2.2 Physical Damage

Conduct a visual inspection of the keyboard for signs of physical damage. Photos of damage are recommended to substantiate any subsequent claim. The following list is provided as a basic guide for conducting visual inspection:

a. Inspect the keyboard and case for scratches and cracks.

b. Check for proper mechanical operation of the keyboard.

c. Check accessories for signs of physical damage.

A2-2.3 Packing for Reshipment

If the SD425 is to be reshipped, use the original shipping container and packing materials. If the are not available, the following materials are recommended for use:

a. A double-wall carton, test strength 350 pounds Sq./in. The carton should be large enough to enclose the SD425 when surrounded by the packing materials listed in items, b, c, and d, below.

b. Heavy paper cardboard covering all instrument surfaces.

c. Polyurethane, bubble pack, or corrugated paperboard between the instrument projections and the carton inner wall.

d. At least four inches of shock-absorbing material such as extra firm polyurethane.

A2-2.4 Warranty or Damage Claims

If the SD425 was physically damaged in shipment or does not operate as specified, immediately notify the carrier and the nearest Scientific-Atlanta Sales/Service office or representative listed in the rear of this manual. The local office will arrange for repair or replacement of the instrument.

NOTE

Please attach an identification tag to the damaged item showing your company's name, address, telephone number, and a short description of the damage or problem.

A2-3 SAFETY PRECAUTIONS

The SD425 presents no hazards to the operator if the equipment is operated according to the instructions in this manual.

A2-4 PREPARATION FOR USE

A2-4.1 Power Requirements

The SD425 receives its power from host equipment via a 6-pin standard DIN connector. Power for the keyboard is +15 volts as supplied by the host equipment.

A2-4.2 Mounting

The unit should be positioned on a steady surface and at a comfortable level for the user. An environment which is comfortable to the user will generally be acceptable for the use and storage of the SD425. Extremes of temperature and humidity should be avoided.

A2-4.3 Power up for the SD425

When the system power is applied to both the SD450 (which contains an RTD card) and the keyboard, the keyboard goes through an internal diagnostic test sequence for about about five seconds. At the end of this time, the keyboard will attempt communication with the RTD card. If communication is established — and normally it would be, a response is sent from the RTD card to the keyboard. This response will cause the "on line" LED to light. If the communication is not established, two beeps will be heard and LED #3 will remain on. The keyboard must be disconnected and reconnected to repeat the power up sequence.

If the SD425 keyboard is not connected when power is supplied to the SD450, the RTD card will never recognize that the SD425 is ever connected even though plugged in and powered up. To announce to the RTD card that the SD425 keyboard is now connected, press the SD450 "boot" switch at the same time as connecting the SD425 (or within a couple of seconds). If however the SD425 was connected upon power up of the SD450, removed, and reconnected, the SD425 communication will be properly executed without pressing the "boot" switch.

Operation

A3-1 INTRODUCTION

This section provides information on SD425 controls and procedures for proper operation.

A3-2 KEYBOARD CONTROLS AND INDICATORS (See Figure A3-1)

The SD425 provides visual information by the selective use of seven (7) lamps on the top of the keyboard. Either the ON LINE or LOCAL lamp will light indicating the applicable computer mode whenever the unit is operational. In ON LINE mode, any characters typed at the keyboard will be transmitted to the host computer. In LOCAL mode, any characters typed at the keyboard will be acted upon locally but not transmitted to the host computer. The KBD Locked, L1, L2, L3, and L4 indicators are not used on the SD425.

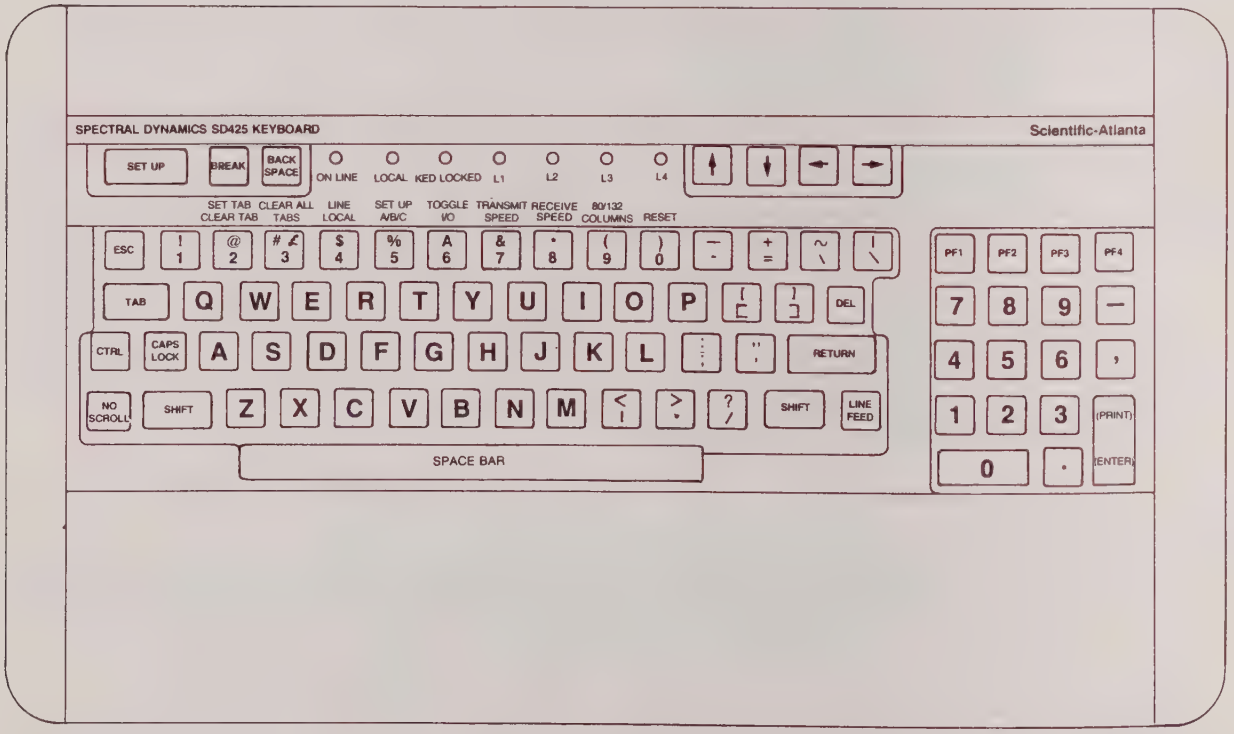


Figure A3-1.

A3-2.1 Audible Indications

The SD425 uses a built-in beeper to indicate the occurrence of selected events. Two short beeps are sounded when the unit is turned on and the power-up self-test is completed. A "beep-beep" is also sounded in response to the bell code from the host equipment. A signal of ten beeps upon power-up signifies that an internal error has occurred. In this situation, the operator must power-down the keyboard, re-power the keyboard, and initiate the computer boot process.

A3-2.2 Special Keys

The SD425 uses several special-purpose keys which enhance the flexibility and general utility of the keyboard. They are defined in the following paragraphs.

A3-2.2.1 Escape (ESC)

The ESC Key transmits the control code for "escape" to the host equipment.

A3-2.2.2 Up, Down, Left, Right Arrows

IN LOCAL mode, these keys move the cursor in the direction indicated by the corresponding arrow. When using Arrows for annotating the display, always ensure that the SD425 is in the LOCAL mode. (When the SD425 is in the ON LINE Mode, the Arrows do not perform the customary annotation functions). If annotation is done in the ON LINE mode the number of characters available to the operator without using the Carriage Return is limited to 128 characters. After that point, the host computer buffer will have been filled and the system will not accept any other characters. In order to rectify this situation, the operator should depress "CTRL" and "U" keys simultaneously. This will clear the buffer, printing a ^U on the screen.

A3-2.2.3 Function Keys

Keys PF1, PF2, PF3, and PF4 are special keys used in conjunction with the Model 13414 Real Time Display (RTD) card. Individual functions of these keys are as outlined on the following page:

SD425 Keyboard	Operation
PF1	When used in either LOCAL or ON LINE mode clears the displayed screen.
PF2	Enables the averaging function of the SD1201 series system. The following steps illustrate a typical use of this special function key: 1) PF2 is depressed. 2) A number of averages is selected as a power of two (2^n), i.e., 2, 4, 8, . . ., 64, and the appropriate numeral keys are pressed. 3) The ENTER key is pressed. Following this sequence, the spectral data displayed on the monitor will gradually reform to the average function entered. The higher the power of two entered, the greater the compression (i.e., levelling) effect on the spectral data.
PF3	Toggles the screen of the monitor. The monitor is capable of displaying any of several displays including ADM Mode — a directory menu, PLOT 10, or spectral data (Real Time Mode) (combinations of annotations/data). Depressing this special function key will cause the alternate screen to be displayed.
PF4	For systems equipped with the optional SD422 or SD424 Video Printers, this special function will enable the printer. This produces a paper copy of the video display.

A3-2.2.4 BACKSPACE Key

The BACKSPACE key transmits the 8-bit code for a backspace command (CTRL-H). In LOCAL mode, the use of Backspace will move the cursor horizontally toward the left margin (same as left arrow control).

A3-2.2.5 NO SCROLL Key

As configured with the RTD card, the NO SCROLL key is used to suspend transmission from the host equipment, allowing the operator additional time to review the display before it rolls over. Scrolling is resumed when the operator again presses the NO SCROLL key. This key performs the described functions by sending the host equipment the XON/XOFF protocol.

A3-2.2.6 SETUP Key

When used with the Associated Real Time Display card, "SETUP, then 4," alternately selects LOCAL or ON LINE operation.

A3-2.2.7 ENTER-PRINT Key

This key on the SD425 performs the same function as Return.

A3-2.2.8 CTRL Key

The CTRL key, when depressed simultaneously with other keys on the SD425, creates new codes for the keys. As noted in paragraph A3-2.2.3, the key used with the "U" key (noted "^U") will clear the input buffer on the host computer. When "^C" is depressed, either in LOCAL or ON LINE mode, all shaker systems connected to the SD1201 series system will be gradually brought to a stop. The "^S" and "^Q" sequences (respectively) will stop and resume the scrolling of the screen. (Same as the NO SCROLL key).

A3-2.2.9 DELETE Key

With the system in PLOT 10 and in the LOCAL mode, the DELETE key when depressed, clears the character the cursor (↓) is pointing to and backspaces one character.

Section IV

Operational Concept

A4-1 INTRODUCTION

The SD425 keyboard transmits and receives in serial data streams of eight (8) bits per character. The unit supports a three key rollover which allows extremely fast typing speed and keystroke overlap. With the three key rollover, if three keys are depressed, the terminal will process the first two (2) keys in the order in which they were depressed and process the third key as soon as either of the other two are released. Except for this unique feature, the unit keyboard functions exactly as does a typewriter. The proper 8-bit code associated with the key legend is transmitted each time a key is depressed. The shift key (as well as CAPS LOCK) has no effect on the *letters* displayed since they are always in upper case; however, the shift key does control the dual functions of the numeral and symbol keys.

A4-2 CONCEPT

The following paragraphs are a brief compendium of material operating characteristics and concepts as reprinted from OEM documents and are provided for the information of the user.

A4-2.2 Format

As noted in the equipment specifications, the SD425 is a 4800 Baud unit with a modified RS232 asynchronous data format. In its present configuration, the SD425 uses 5 volts as space and 0 volts as mark. The word format consists of eight (8) data bits and (1) stop bit.

A4-2.3 Country Select

Three jumpers in the SD425 select one (1) of eight (8) country dependent encoding schemes.

Twenty-seven (27) keys are country dependent and are uniquely encoded in combination with SHIFT and CAPS LOCK.

A4-2.4 "SPECIAL Keys"

Thirty-two (32) other keys (not country dependent) send an 8-bit code with bit seven (7) = 1 and bits 6,5 representing the CONTROL and SHIFT keys and with 4-0 representing a 1 of 32 key identification code. All country dependent and non-special keys send a single 8-bit code where 7 = 0, modified by CAPS LOCK, CONTROL, and SHIFT, resulting in ASCII encoding for country = USA. Table A4-1 is a listing of codes associated with special keys on the SD425.

SD425 SPECIAL KEYS

KEY SEQUENCE

KEY:	REGULAR	SHIFT	CONTROL	CONTROL SHIFT
ESC	1B	1B	1B	1B
Setup	80	A0	C0	E0
Break	81	A1	C1	E1
Back Space	84	A4	C4	E4
N/A	86	A6	C6	E6
N/A	85	A5	C5	E5
N/A	88	A8	C8	E8
N/A	87	A7	C7	E7
No Scroll	83	83	83	83
KEYPAD CODES:				
F1	89	A9	C9	E9
F2	8A	AA	CA	EA
F3	8B	AB	CB	EB
F4	8C	AC	CC	EC
7	8D	AD	CD	ED
8	8E	AE	CE	EE
9	8F	AF	CF	EF
-	90	B0	D0	F0
4	91	B1	D1	F1
5	92	B2	D2	F2
6	93	B3	D3	F3
,	94	B4	D4	F4
1	95	B5	D5	F5
2	96	B6	D6	F6
3	97	B7	D7	F7
Enter	98	B8	D8	F8
0	99	B9	D9	F9
.	9A	BA	DA	FA
Return	9B			

Figure A4-1. SPECIAL KEYS

Section V

Calibration and Maintenance

A5-1 INTRODUCTION

The SD425 Keyboard does not have any adjustments and does not require calibration. In the unlikely event of hardware failure in the keyboard, contact the nearest service facility of Scientific-Atlanta. Field maintenance is not practicable on the keyboard, therefore, no attempt is made to provide specific troubleshooting steps. The keyboard schematic, Figure A5-2, is provided as part of this text for information only and is not intended for use in the performance of field maintenance.

A5-2 PREVENTIVE MAINTENANCE

Preventive maintenance consists of mechanical inspection and cleaning. An installation operational check should be accomplished in accordance with the applicable system manual.

A5-2.1 Mechanical Inspection

Periodically check the SD425 for damage to the keyboard and case. Inspect the interconnecting cable for signs of fraying of faulty connections. Visually check for dirt buildup on and between the keys.

A5-2.2 Cleaning

Periodic cleaning of the keyboard with a clean rag immersed in a solution of mild soap and water is recommended as required.

A5-2.3 DIN Connector

The keyboard is physically connected to the Model 13414 RTD via a 6-pin DIN connector. Specific leads and connections are depicted in Figure A5-1.

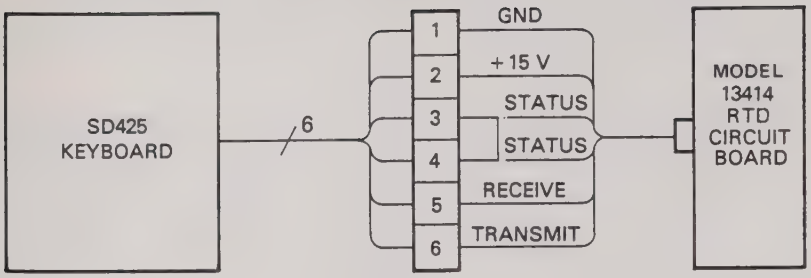


Figure A5-1. SD425 Model 13414 Interconnection.

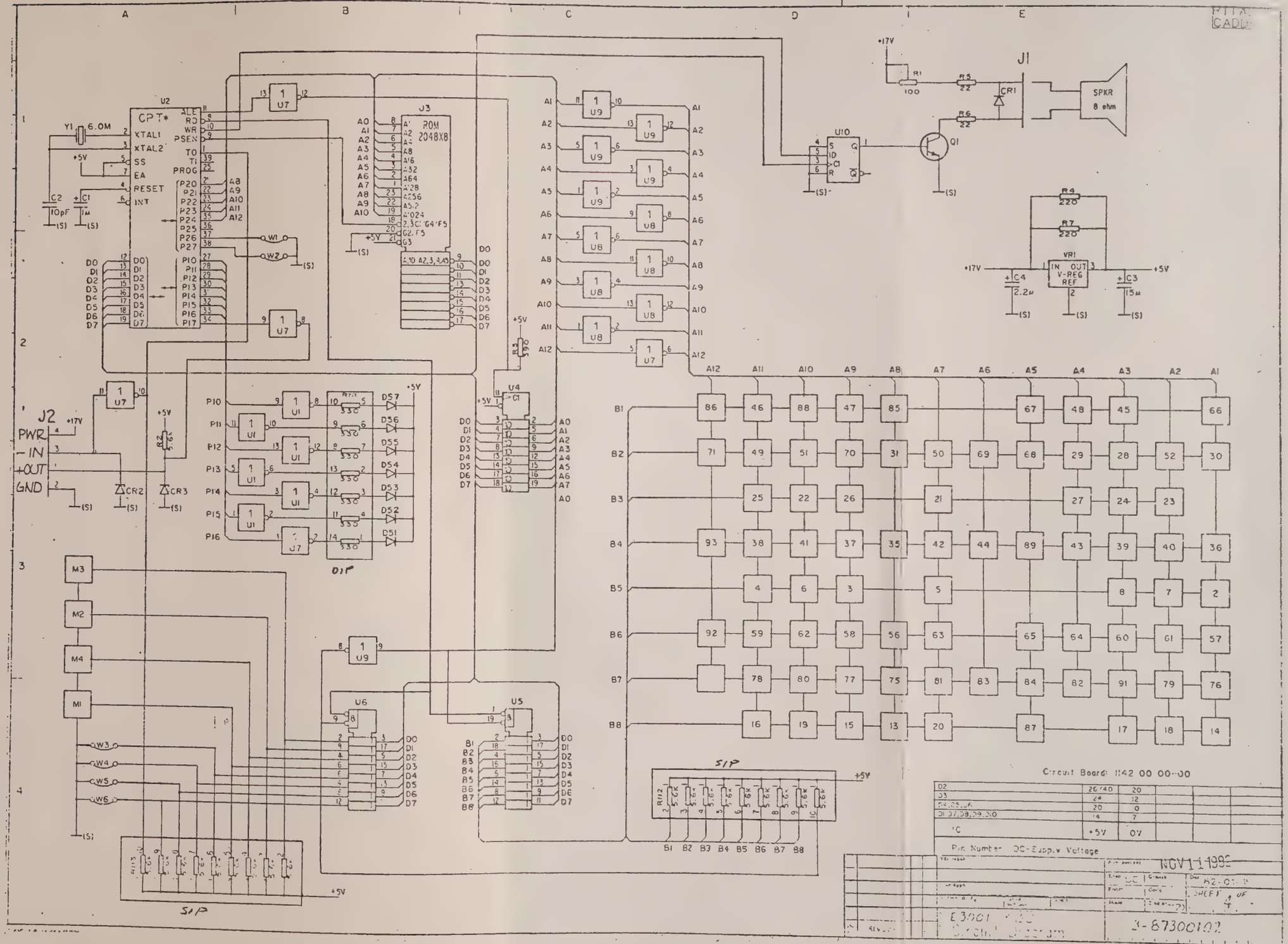

J1
SPKR
8 ohm
+17V
+5V
U2
CPT*
Y1
6.0M
U3
ROM
2048X8
J2
PWR
-IN
+OUT
GND
U4
U5
U6
SIP
Circuit Board: 1142 00 00-00
Pin Number DC-Supply Voltage
NOV 1 1 1982
3-87300102

Figure A5-2.

SEGMENT TWO
SD426 DATA DISPLAY

Section 1

Introduction

B1-1 INTRODUCTION

The SD426 Data Display (Figure B1-1) is a solid-state raster-scan cathode-ray tube (CRT) display unit. The unit is designed for high quality resolution of dot-matrix alphanumeric characters or graphic plots. The CRT has a 12-inch (diagonal) screen with a 90° deflection angle. The screen is protected by a polarized green filter to enhance display resolution and reduce glare from reflected light. This document segment will provide information on installation, operation, and maintenance of the SD426.

B1-2 ASSOCIATED DOCUMENTATION

This manual contains the information necessary to install, operate, and maintain the SD426 Data Display. The unit typically interfaces with the SD1201 (series) Digital Vibration Control Systems through the Model 13414 Real Time Display (RTD) card. Refer to the applicable system manuals for amplifying information related to the interfaces.

B1-3 PHYSICAL DESCRIPTION

The SD426 Data Display is 14.2 inches (360mm) wide, 11.7 inches (296 mm) high and 13 inches (330 mm) deep and weighs 13 lbs and 3.2 oz (6.0 kg).

B1-4 ACCESSORIES

The SD426 accessory kit consists of a connector-adaptor assembly, part number 10794400. A grounded power cord is provided as a part of the basic unit. This technical manual is also provided with the unit.

B1-5 SPECIFICATIONS

The specifications for the Data display are shown in Table B1-1.

Table B1-1. Specifications

Picture Tube	C1270P31 12" diagonal and 90° deflection
Phosphor	Green (P31)
Video Input Signal	Composite video signal
Polarity	Negative sync.
Level	1.0 Vp-p
Impedance	75Ω (switchable to higher impedance)

Figure B1-1. SD426 Data Display

Table B1-1. Specifications (Continued)

Input Terminal	Phono pin jacks
Active Display Area	231 (W) × 175 (H) mm
Scanning Frequency	
Horizontal	15.75 kHz (63.5 μs)
Vertical	60 Hz (16.67 ms); 50 Hz (20.0 ms)
Active Video Period	
Horizontal	48.0 μs max.
Vertical	14.61 ms max. 17.78 ms max.
Video Bandwidth	30 Hz ~ 20 MHz (±3 dB)
Display Characters	80 characters with 25 lines 5 × 7 dot matrix (8 × 8 dot/cell)
Sound Input Power	−36 dBm (Input impedance 5 kΩ)
Sound Output Power	1.0 W (10% distortion) (0.1 Vp-p)
Controls	
Inside	H. width, V. height, V. line, focus, sub brightness
Outside	Volume, brightness, contrast, H. hold, V. hold
Operating Ambient Temperature	0%C~ +40%C
Power Supply	A type: 120V 60 Hz E type: 110V/120V/220V/240V 50/60 Hz
Power Consumption	30W
Dimensions	360(W) × 296(H) × 330(D) mm
Weight	6.0 kg

Section II

Installation

B2-1 INTRODUCTION

This section contains procedures for initial inspection, safety precautions, and installation steps for preparation for use. Shipping damage, in-warranty repairs, and methods for repacking the instrument for shipment are also discussed.

B2-2 INITIAL INSPECTION

B2-2.1 Unpacking

No special tools or procedures are required for unpacking the SD426; however, care must be taken when handling so as not to drop or otherwise cause damage to the unit. Conduct an inventory of all items listed on the packing list supplied with the shipping container. In the event of any shortage, or if shipping damage is apparent, file a claim with the carrier claims agent and forward a copy to Scientific-Atlanta. Save the packing and shipping container for possible reshipment of the equipment.

B2-2.2 Physical Damage

Conduct a visual inspection of the SD426 for signs of physical damage. Photos of damage are recommended to substantiate any subsequent claim. The following list is provided as a basic guide for conducting visual inspection:

a. Inspect the display for scratches, cracks, and CRT damage.

b. Check for proper mechanical operation of the controls.

c. Check accessories for signs of physical damage.

B2-2.3 Packing for Reshipment

If the SD426 is to be reshipped, use the original shipping container and packing materials. If they are not available, the following materials are recommended for use:

a. A double-wall carton, test strength 350 pounds/Sq./in. The carton should be large enough to enclose the SD426 when surrounded by the packing materials listed in items b, c, and d, below.

b. Heavy paper cardboard covering all instrument surfaces.

c. Polyurethane, bubble pack, or corrugated paperboard between the instrument projections and the carton inner wall.

d. At least four inches of shock-absorbing material such as extra firm polyurethane.

B2-2.4 Warranty or Damage Claims

If the SD426 was physically damaged in shipment or does not operate as specified, immediately notify the carrier and the nearest Scientific-Atlanta Sales/Service office or representative listed in the rear of this manual. The local office will arrange for repair or replacement of the instrument.

NOTE

Please attach an identification tag to the damaged item showing your company's name, address, telephone number, and a short description of the damage or problem.

B2-3 SAFETY PRECAUTIONS

The SD426 presents no hazards to the operator if the equipment is operated according to the instructions in this manual.

B2-3.1 Explosion Hazards

Do not operate the equipment in any area where flammable vapors may be present. Operating any AC-line powered instrument in such an environment can cause an explosion.

B2-3.2 Shock/Burn Hazards

Dangerously high voltage and current sources are present inside the SD426 when AC power is applied. Jewelry or other metal objects, if allowed to contact the voltage and current sources in the SD426 can draw sufficient current to melt the jewelry causing severe burns.

B2-3.3 Cooling

The SD426 uses the screen openings built into the case of the instrument to provide for air circulation and cooling. Under normal use conditions, ventilation for operator comfort is sufficient for the SD426.

B2-4 PREPARATION FOR USE

B2-4.1 Power Requirements

The SD426 receives power from a standard (grounded) three-prong plug and any 115-volts AC, 60 v outlet.

B2-4.2 Mounting

The SD426 may be provided as a rack mounted (SD426-2 configuration) or a desk top version.

B2-4.3 Installation Checkout

In order to conduct installation checkout, the instrument must be connected to a basic system as shown in figure A1-1. Energize the SD426 with the OFF-ON-VOLume control. The Power On Indicator will illuminate. Adjust the CONTRAST and BRIGHT controls as necessary to display the selected data. If the screen is unstable, adjust Horizontal and/or Vertical Hold controls at the rear of the SD426 to stabilize the screen. If problems occur during this checkout, refer to Operation and Troubleshooting Procedures in Sections 3 and 4.

Section III

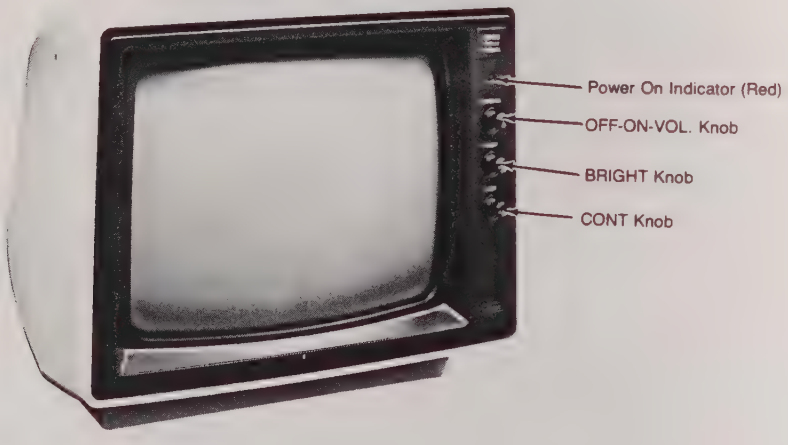
Operation

B3-1 INTRODUCTION

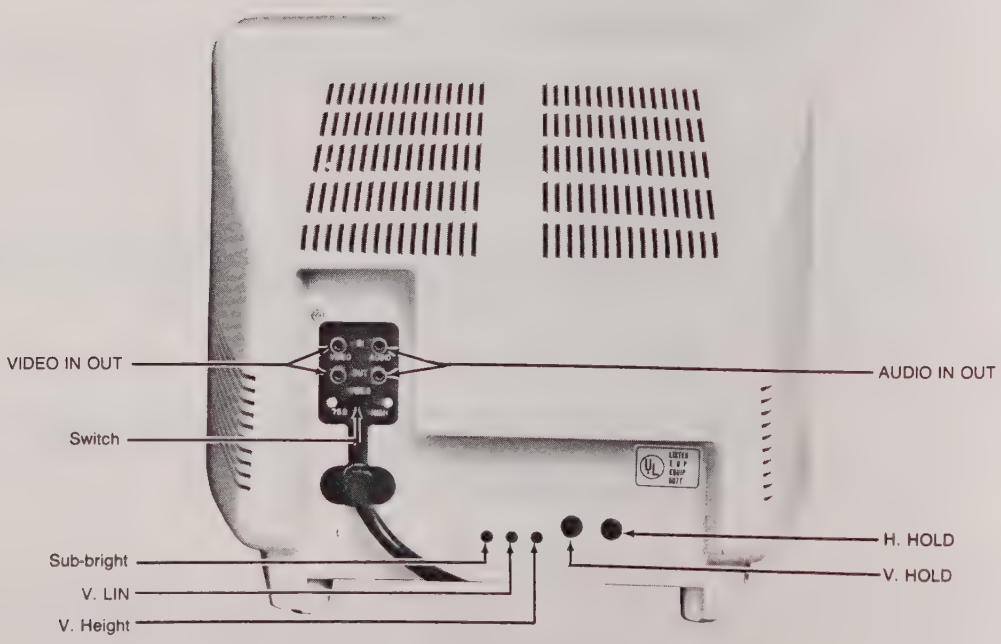
This section provides information on the SD426 controls and procedures for proper operation.

B3-2 CONTROLS AND INDICATORS

The controls and indicators shown in Figure B3-1 are described in the following listings:



a. Front View



b. Rear View

Figure B3-1. Controls and Indicators

a. Power On Indicator

Illuminates red to indicate that power is on.

b. OFF-ON-VOLume

Turns the power on and off, and adjusts volume level. As the knob is turned clockwise, the power is turned on, allowing the sound and picture to come on, and lighting the indicator lamp. The further clockwise the knob is turned, the louder the volume. Power is turned off when the knob is turned fully counterclockwise.

c. BRIGHTness Control Knob

The further clockwise the knob is turned, the brighter the picture becomes. Adjustment is dependent upon ambient lighting conditions.

d. CONTrast Control Knob

Contrast is adjusted by turning the CONT control in a clockwise direction to increase contrast and CCW to decrease it.

e. H. HOLD Control Knob

When stripes appear on the screen, turn the knob slowly in either direction until the stripes disappear and a normal picture appears.

f. V. HOLD Control Knob

When picture rolls upward or downward, turn this knob slowly until it is steadied.

g. VIDEO Phono Pin Jacks

The video output signal from a microcomputer should be fed to the VIDEO IN pin jacks. Use the VIDEO OUT pin jacks when bridging a video signal between the SD426 and other equipment.

h. AUDIO Phono Pin Jacks

The audio output signal, if used, should be fed to the AUDIO IN pin jacks. Use the AUDIO OUT pin jacks when bridging the audio signal between the SD426 and other systems.

i. 75-ohm Terminal Switch

Turn the switch to the left "75-ohms" when the connected equipment has a 75-ohm video output impedance; turn it to the right ("HIGH") when it has a higher impedance.

B3-3 CONNECTIONS

The following connections should be made with a microcomputer that has a video output impedance of 75 ohms.

a. One display and one microcomputer (Figure B3-2)

Feed the video signal from the microcomputer to the unit's VIDEO IN pin jacks, and slide the 75-ohm terminal switch to the left ("75-ohms"). Audio signal, if used, should be connected to the unit's AUDIO IN pin jacks.

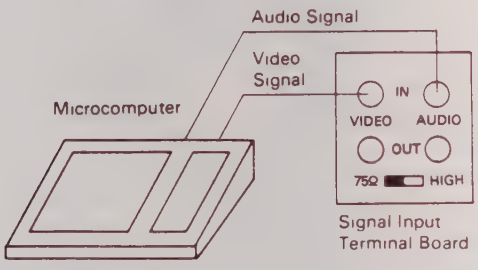


Figure B3-2. One Display

b. More than two displays and one microcomputer (Figure B3-3)

The 75-ohm terminal switches on all the displays but the last one should be turned to the right ("HIGH"), the switch on the last display should be set to the left ("75-ohms").

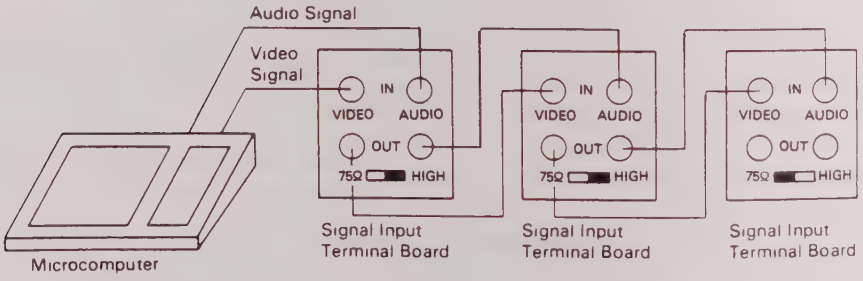


Figure B3-3. More Than Two Displays

B3-4 SEMI-FIXED ADJUSTMENTS (Figure B3-4)

B3-4.1 Adjustment Procedures

Use the following adjustment procedures as needed to initialize vertical hold, horizontal width, and vertical height and linearity. (See Fig. B3-4)

a. B+ Adjustment: VR601

Connect a DC voltmeter (range: 15 to 20 V) to TP91 (Figure B4-9) on the printed circuit board and the ground, and adjust VR 601 until the voltmeter reads +12V.

Vertical Hold Adjustment: VR403

Turn VR3 (V. HOLD) to the center of its range, and adjust VR403 (SUB V. HOLD) to synchronize.

b. Horizontal Width Adjustment: L503 (H. width coil)

1. Display a character (for example, the letter H) fully on the CRT screen, and adjust the brightness and contrast to the desired levels.

2. Turn the hexagonal core of L503 until the optimum horizontal amplitude is obtained.

c. Vertical Height Adjustment (VR401 V. HEIGHT) Vertical Linearity Adjustment (VR402 V. LIN)

1. Display a character (for example, the letter H) fully on the CRT screen, and adjust the brightness and contrast to the desired levels.

2. Turn VR401 and VR402 until the optimum vertical amplitude and linearity are obtained.

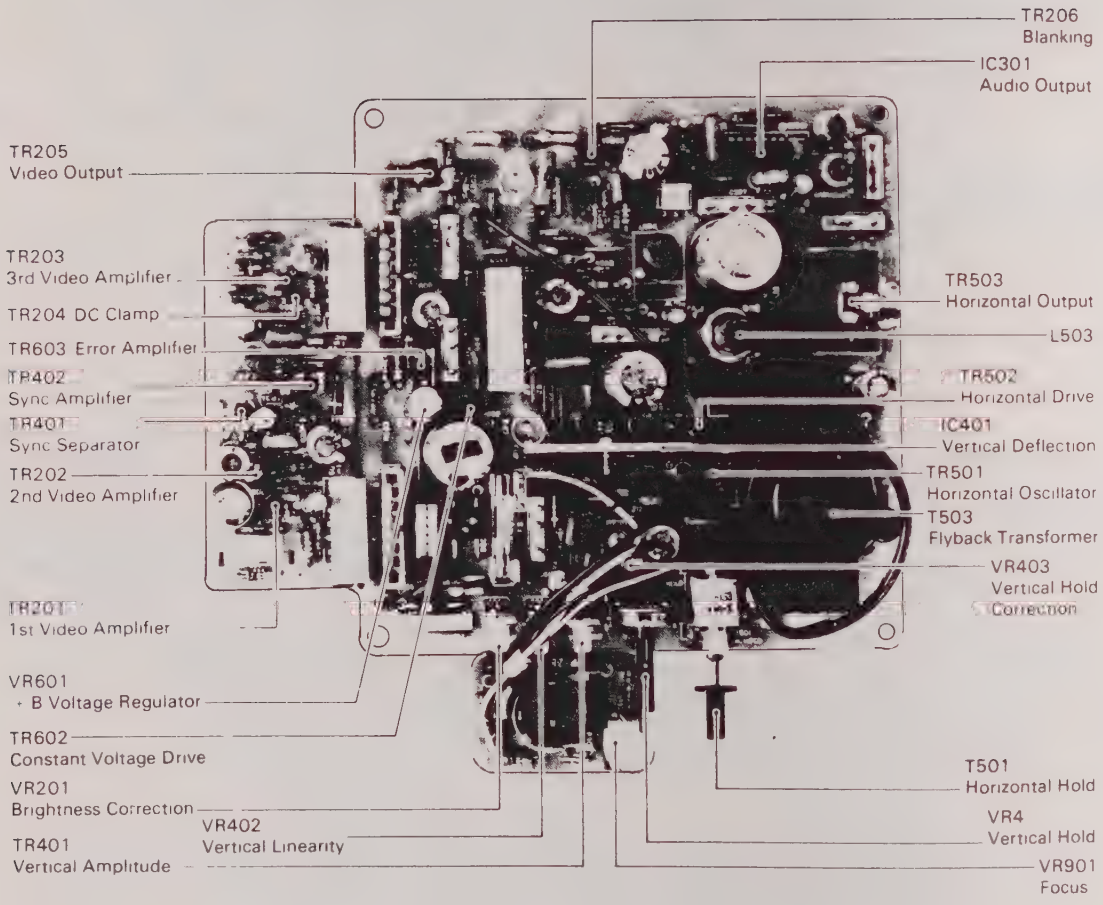
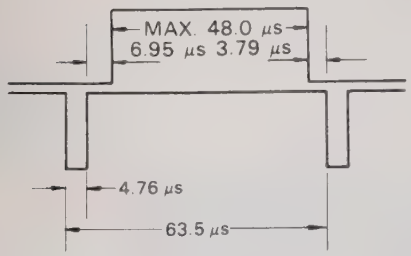


Figure B3-4. Locations of Semi-Fixed Adjustments

B3-5 VIDEO INPUT SIGNAL (Figure B3-5)

The waveform and timing chart of recommended signals is as follows.

Horizontal Synchronization



Vertical Synchronization

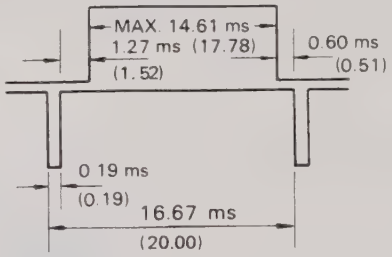


Figure B3-5. Video Input Signals

Figures in parentheses are applicable for a vertical oscillator frequency of 50 Hz.

The unit is factory set for the vertical frequency of 60 Hz. To use the unit on the 50 Hz vertical frequency, the vertical hold and vertical height must be re-adjusted.

Operational Concept

B4-1 INTRODUCTION

This section provides the user with a detailed description of the circuits comprising the SD426 Data Display. Figure B4-1 is a Block Diagram depicting the functional arrangement of circuits and their basic interconnection. Video (and sound, if used) is processed as defined in the subsequent paragraphs.

B4-2 CIRCUIT DESCRIPTIONS

When using the circuit descriptions in this section, refer to the Functional Block Diagram B4-1 and the Schematic Diagrams B5-4 and B5-5 for location of components and test points.

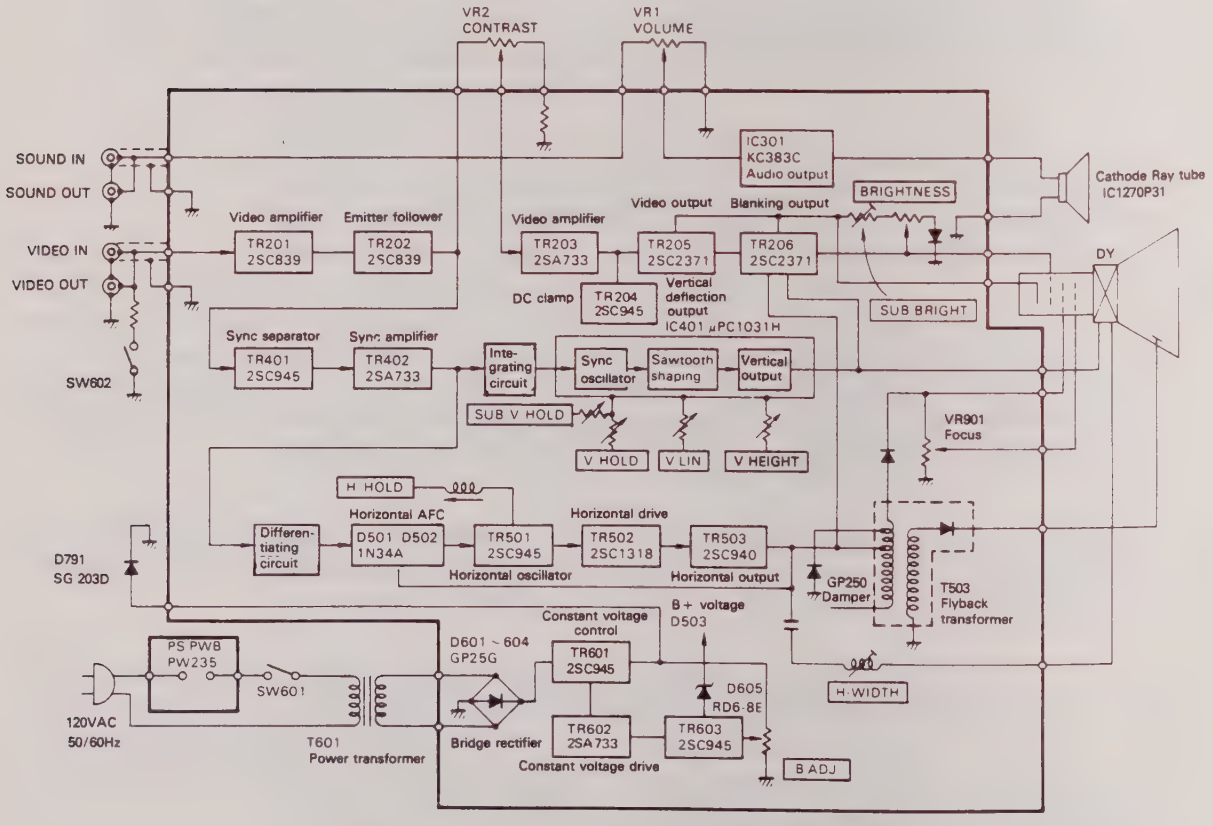


Figure B4-1. SD426 Functional Block Diagram

B4-2.1 Power Regulator Circuit

The Power Regulator Circuit is used to stabilize the power source voltage in case of fluctuations in the electrical load.

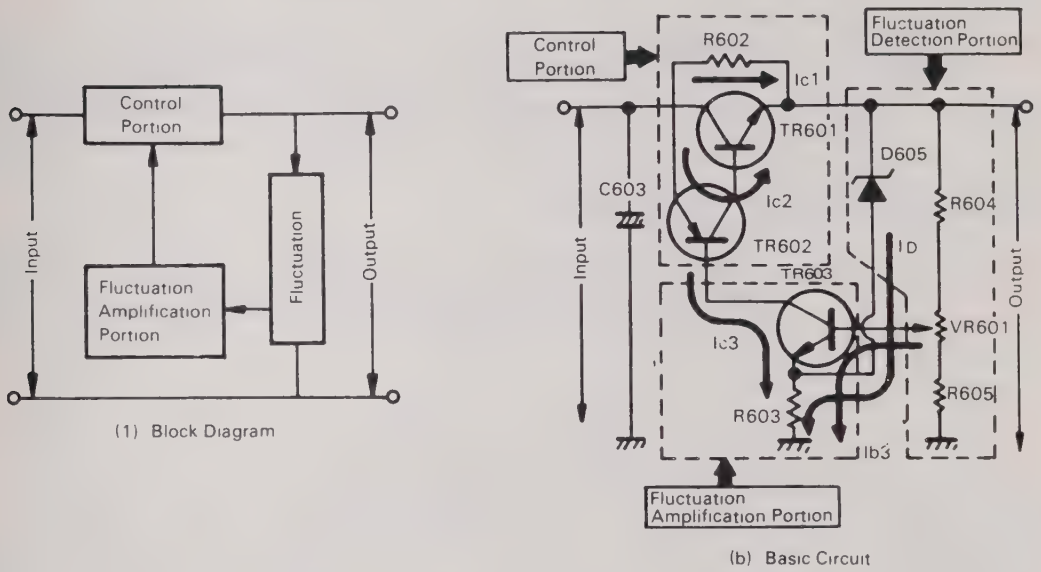


Figure B4-2. Power Regulator Circuit

As shown in Figure B4-2 the Power Regulator Circuit is composed of three major blocks when roughly divided into functional areas. The Fluctuation Detection Portion detects the fluctuation of output voltage and adds this to the Fluctuation Amplification Portion. The Fluctuation Amplification Portion amplifies the voltage fluctuation and adds this to the Control Portion. By doing so, the Control Portion will control the current supplied to the B+ Circuit.

If output voltage begins to rise, the fluctuation amount will be added to the emitter of TR603 by the Zener diode D605, and the TR603 emitter voltage will rise.

At the base of TR603, the voltage fluctuations will be divided at R604, R605, and any fluctuation voltage smaller than the emitter voltage will be additive. Therefore, the voltage on the emitter will become greater than the base, and the voltage difference between the base of TR603 and the emitter will become smaller, and the base current will decrease.

As the base current of TR603 decreases, the base current of TR602, TR601 will decrease.

Consequently, the collector current of TR601 will decrease, and make the output voltage drop.

In case the output voltage begins to drop, the potential at TR603's base and emitter will be reduced, but the degree of reduction will be greater for the emitter.

The voltage difference between TR603 base and emitter will become grater, and lb3 will increase. By this, 1c3, 1c2 and 1c1 will increase and make the output voltage rise.

R602 provides that the output voltage will be available immediately when the power source switch is turned ON. If R602 were not in the circuit, output voltage would not be impressed when the power source switch was turned ON, and TR603 would not actuate. As a result, no voltage would appear in the output.

For this reason, voltage impressed to the output side at the start up time by R602, actuates the constant voltage circuit.

B4-2.2 Video Circuits

The VIDEO INPUT of 1 Vpp is passed from the A5 terminal of PW-279 of the main PWB, then added to the base of TR201 of 1st VIDEO AMP via the U_2 terminal of VIDEO PWB PW-280.

It is amplified to about 2.7 Vpp by TR201 and TR202. Between the output side of TR202 and the amplifier of the next state voltage ratio, VR is accomplished and the input to TR203 of the next stage is increased or decreased by the changes in this division ratio, and the adjustment of the picture contrast is made.

Each stage of the image portion circuitry is connected via capacitors, so the direct current portion of the signal will be eliminated and the average brightness of the picture will be reduced. On the base of TR204, the synchronous pluses from TR402, (which have been delayed by L201, C206) are connected such that TR204 will maintain continuity only during their presence.

This period is equivalent to the "back porch" of the composite video signal, and when continuity is made for TR204, the back porch of the video signal on the collector side will be clamped to the electric potential of the emitter side of TR204.

The VIDEO signal will then be amplified by TR205, and impressed on the cathode of the CRT.

The output of TR202 as seen at test point TP31 will be synchronously separated at SYNC SEP of TR401. The synchronous signal which has been amplified by TR402 will then pass through an integration circuit composed of R408, R409, C405 and C408 via terminal W2, and only vertical synchronous signals will be separated and added to pin 5 of IC401.

The synchronous signals which passed through the differentiating circuits C501 and R501 via terminal W3 will be added to the unbalanced AFC Circuit.

B4-2.3 Sound Circuits

The sound signal which enters from the SOUND IN terminal will input pin 7 of IC301 via S1 terminal of the main PWB and the Sound Adjustment control, VR1.

At this IC, it is amplified to about 40 DB and outputted at pin 8. Voltage to drive the IC is added from C603 and pin 9. C308 and R306 of pin 6 enhances the "S" characteristics. C305 between 8 and pin 10 is a capacitor for bootstrap, and R302 is resistance for bias of the output.

B4-2.4 Vertical Deflection Circuits

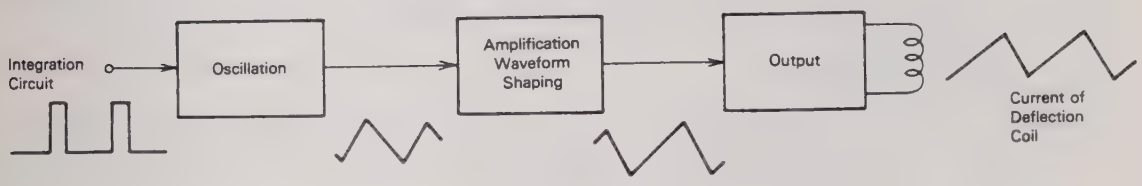


Figure B4-3. Composition of the Vertical Deflection Circuit

As shown in the block diagram (Figure B4-3), the basic circuit of the vertical deflection circuit is composed of a vertical oscillation circuit, which generates saw tooth wave voltage, amplification waveform shaping, and an output circuit.

The vertical synchronous signal that has been synchronously separated and which has passed through the integration circuit is added to the vertical synchronous circuit by pin 5 of IC401.

The saw tooth wave of 60 (or 50) Hz which has been generated by the vertical oscillation circuit is taken from pin 4, and after passing through R412, VR401 and C410, it is added to pin 7, then after the waveform shaping, it is amplified, and added to the vertical output.

R413 and C409 provide the time constant which determine the oscillation rate.

The vertical output waveform is a waveform in which pulses are superimposed with the sawtooth wave as seen at TP82. The circuit is designed so that high voltage is added to the retrace line period, and low voltage is added to the scanning period in order to decrease the overall power consumption of the vertical deflection circuit.

VR401 is the adjustment of V Height and VR402 is the adjustment of V Lin. They are connected to pin 4 and pin 7, respectively.

Vertical synchronization is done by VR4 connected to pin 6 of the IC.

B4-2.5 Blanking Circuit (Figure B4-4)

During the retrace line period, if the television picture tube were brightened, white slantwise lines (vertical retrace flyback) would appear on the tube and degrade the picture.

In order to prevent this, the picture tube must be prevented from brightening during the retrace (flyback) line period.

In actual circuit operation, a positive polarity pulse generated during the retrace (flyback) period is added to the base of the Blanking Transistor TR206 from IC401 pin 1 and the collector of horizontal output transistor TR503, and a negative polarity pulse is fed to the collector of TR206, and added to the control grid G1 of CRT via C211.

During the retrace (flyback) line period, the bias of CRT is thus increased to cut off.

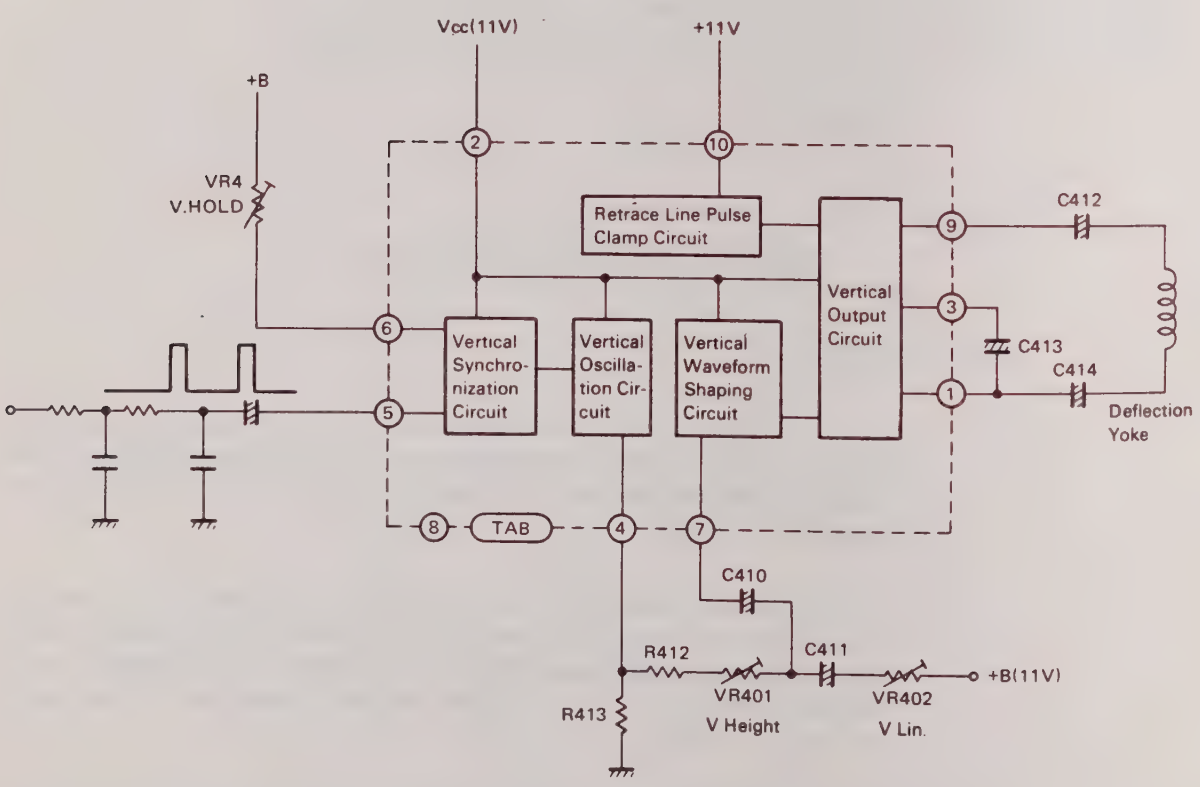


Figure B4-4. Blanking Circuit

B4-2.6 Horizontal Deflection Circuit

As shown in Figure B4-5, the horizontal deflection circuit is composed of the AFC Circuit, Oscillation Circuit, and Output Circuit. Its function is to pass sawtooth wave current synchronized with the horizontal synchronization signal to the deflection coil of the picture tube.

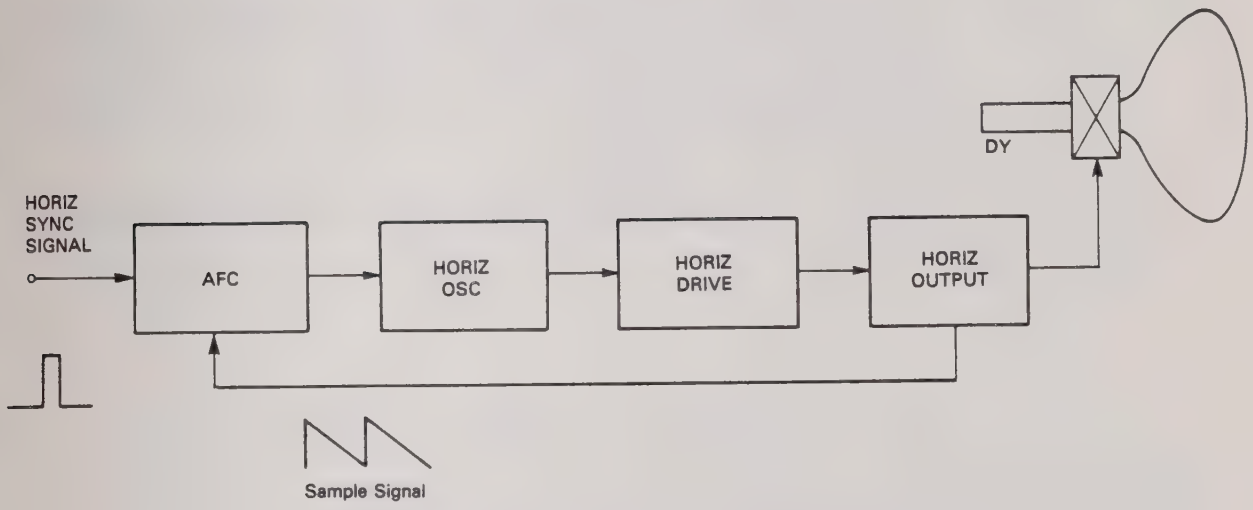


Figure B4-5. Horizontal Deflection Circuit

B4-2.7 AFC Circuit

The vertical synchronous signals which control the vertical oscillation current pass through 2 or 3 stages of an integration circuit which acts as a lowpass filter. The horizontal synchronous signals and noise pulses are leveled off and do not appear in the output.

The AFC circuits compare the phase of the oscillation circuit and the phase of the synchronous signal, then generate direct current output voltage proportionate to the phase difference. This voltage is added to the oscillation circuit, and the oscillation frequency and phase will thus coincide with the horizontal synchronous signal.

The horizontal oscillation signal fed back to the AFC circuit is comprised of a pulse generated in the horizontal output circuit and changed into a sawtooth wave (This is called "comparative waveform signal").

B4-2.8 Horizontal Oscillator Circuit (Figure B4-6)

The horizontal oscillation circuit which generates a frequency of 15.625 kHz is a blocking oscillator; with R510, C507 and R508 providing the time constant.

The Oscillation Transformer is designed so that positive feedback and oscillation will occur at T501.

In case the base voltage of the oscillation transistor rises, the oscillation frequency also rises, and in case the base voltage becomes low, the oscillation frequency drops.

The frequency control will function such that if the oscillation frequency begins to lower (phase is delayed) the output of AFC increases.

Since this voltage is added to the base of the horizontal oscillator, it will function to raise the oscillation frequency (phase is advanced).

If the oscillation frequency begins to rise (the phase advances), the output of AFC voltage will drop. This drop will be sensed at the oscillation circuit and will function to lower the oscillation frequency (the phase is delayed). As a result of these actions, the horizontal oscillation frequency and its phase will always coincide with the horizontal synchronous signal.

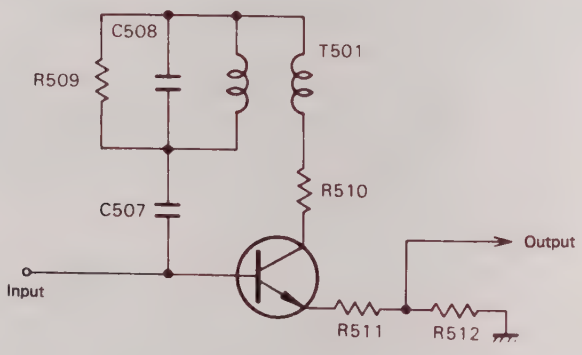


Figure B4-6. Horizontal Oscillation Circuit

B4-2.9 Horizontal Drive Circuit (Fig. B4-7)

The horizontal oscillation drive circuit is located between the oscillation circuit and the output circuit, and its function is to amplify the oscillation output and drive the output circuit. In Figure B4-7, its circuit is shown.

The waveform which is amplified is basically rectangular in form. Since transformers are used, sharp noise pulses generate as the transistors turn ON or OFF. C510 and R513 are inserted in the circuit to lessen the effects of the noise pulses.

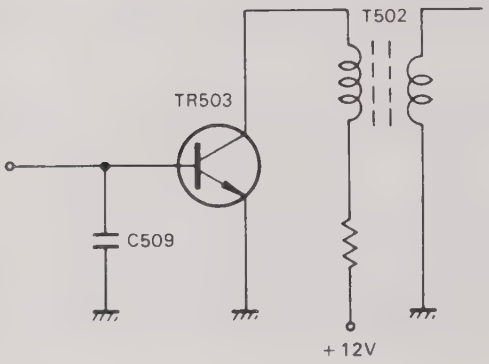


Figure B4-7. Horizontal Drive Circuit

B4-2.10 Horizontal Output Circuit (Fig. B4-8)

The horizontal output circuit has the function of sending sawtooth wave current at 15.625 kHz to the horizontal deflection coil of the CRT. This is done through the switching action of the transistors. Figure B4-8 shows the horizontal output circuit.

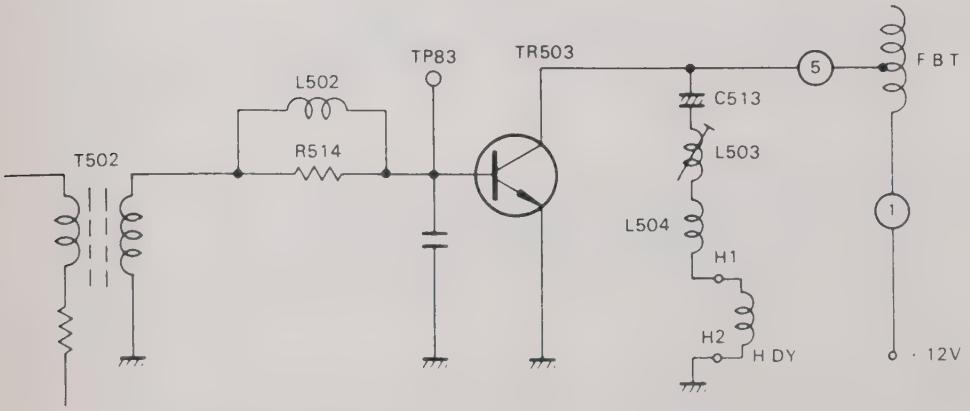


Figure B4-8. Horizontal Output Circuit

Section V

Calibration and Maintenance

B5-1 INTRODUCTION

This section provides information related to the calibration and maintenance of the SD426.

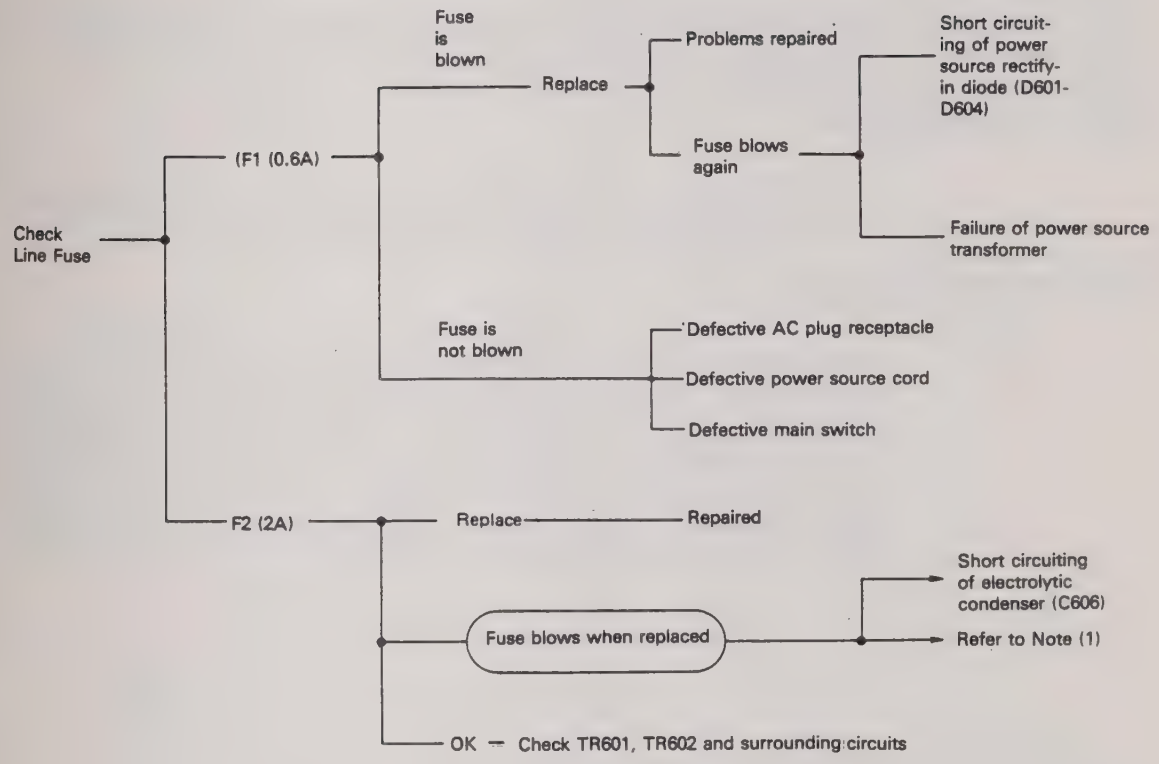
B5-2 CALIBRATION

The SD426 requires no field calibration. The adjustments noted in Section B3 if properly accomplished, will suffice to provide an optimum display.

B5-3 MAINTENANCE

In the event of hardware failure in the SD426, contact the nearest service facility of Scientific-Atlanta. If this is not practicable, use the following troubleshooting procedures and charts reproduced from the OEM manual to isolate the failure to a specific circuit and/or component. When using the troubleshooting charts, refer to the printed wiring assembly (PWA) drawings in Figures B5-1, B5-2, and B5-3 and the schematic diagrams in Figures B5-4 and B5-5, to locate components and test points.

B5-3.1 No Sound Or Raster



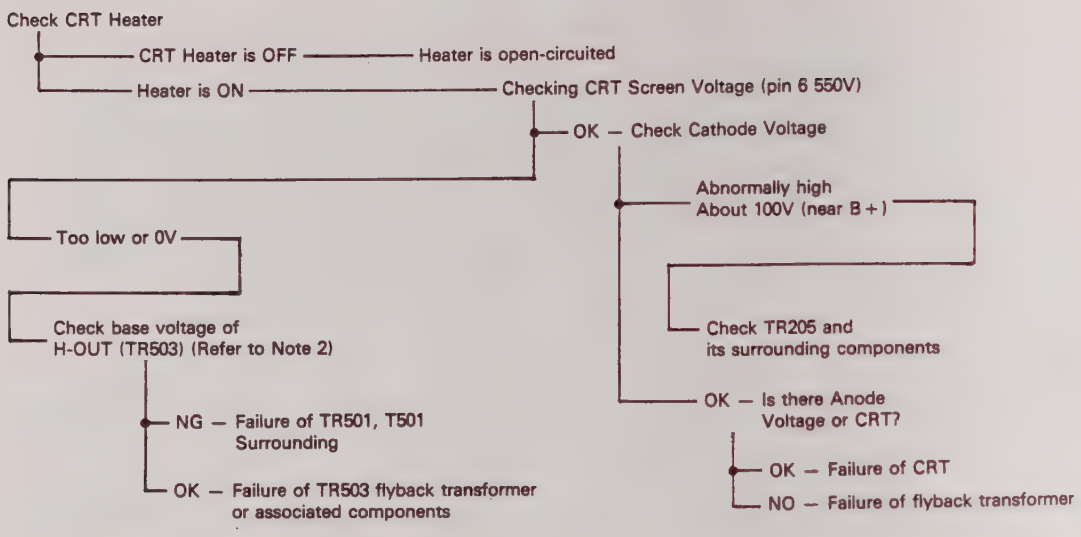
Note (1): Supply source of DC voltage (12V)

TP91 (12V)
(Fig. B5-9)

- (1) To TR205 (VIDEO Output) Base
- (2) To TR401 (SYNC SEP) Emitter
- (3) To IC401 (Pulse amp, sync amp, OSC and Output) pins (10) and (2)
- (4) To TR501 (H. OSC) Base and Collector
- (5) To TR502 (H. Drive) Collector
- (6) To FBT terminal
- (7) To CRT Heater

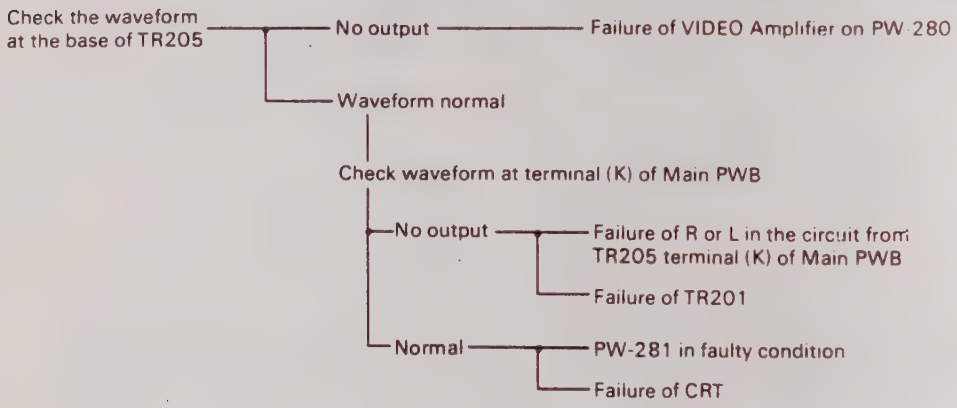
As described above, 12VDC is supplied to various circuits from TP91. Therefore in order to find what the cause is, it is necessary to isolate the circuits and judge where the trouble lies.

B5-3.2 Sound is Normal, But no Raster

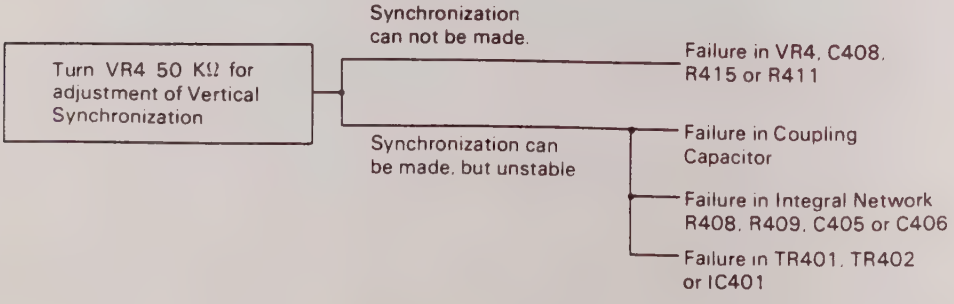

Check CRT Heater
CRT Heater is OFF
Heater is open-circuited
Heater is ON
Checking CRT Screen Voltage (pin 6 550V)
OK — Check Cathode Voltage
Abnormally high
About 100V (near B+)
Check TR205 and
its surrounding components
Too low or 0V
Check base voltage of
H-OUT (TR503) (Refer to Note 2)
NG — Failure of TR501, T501
Surrounding
OK — Failure of TR503 flyback transformer
or associated components
OK — Is there Anode
Voltage or CRT?
OK — Failure of CRT
NO — Failure of flyback transformer

Note (2): If an AC10V range tester is connected to the base of TR503, the meter will deflect when the horizontal oscillating circuit is oscillating, so it can be judged whether the trouble exists before the oscillating circuit or after the oscillating circuit.

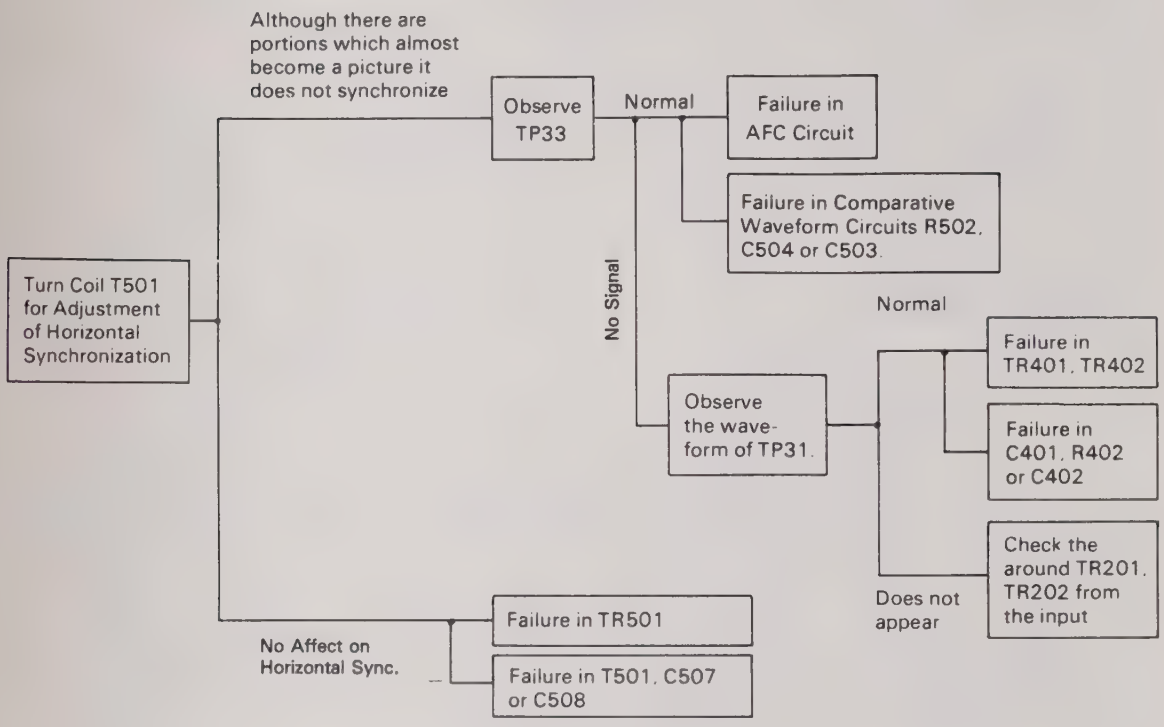
B5-3.3 Sound And Raster Are Normal, But no Picture or Data Display Present


Check the waveform
at the base of TR205
No output
Failure of VIDEO Amplifier on PW-280
Waveform normal
Check waveform at terminal (K) of Main PWB
No output
Failure of R or L in the circuit from
TR205 terminal (K) of Main PWB
Failure of TR201
Normal
PW-281 in faulty condition
Failure of CRT

B5-3.4 Vertical Synchronization Cannot be Made



B5-3.5 Horizontal Synchronization Cannot be Made


Turn Coil T501 for Adjustment of Horizontal Synchronization
Although there are portions which almost become a picture it does not synchronize
Observe TP33
Normal
Failure in AFC Circuit
Failure in Comparative Waveform Circuits R502, C504 or C503.
No Signal
Observe the wave-form of TP31.
Normal
Failure in TR401, TR402
Failure in C401, R402 or C402
Check the around TR201, TR202 from the input
Does not appear
No Affect on Horizontal Sync.
Failure in TR501
Failure in T501, C507 or C508

a. Mounting Side

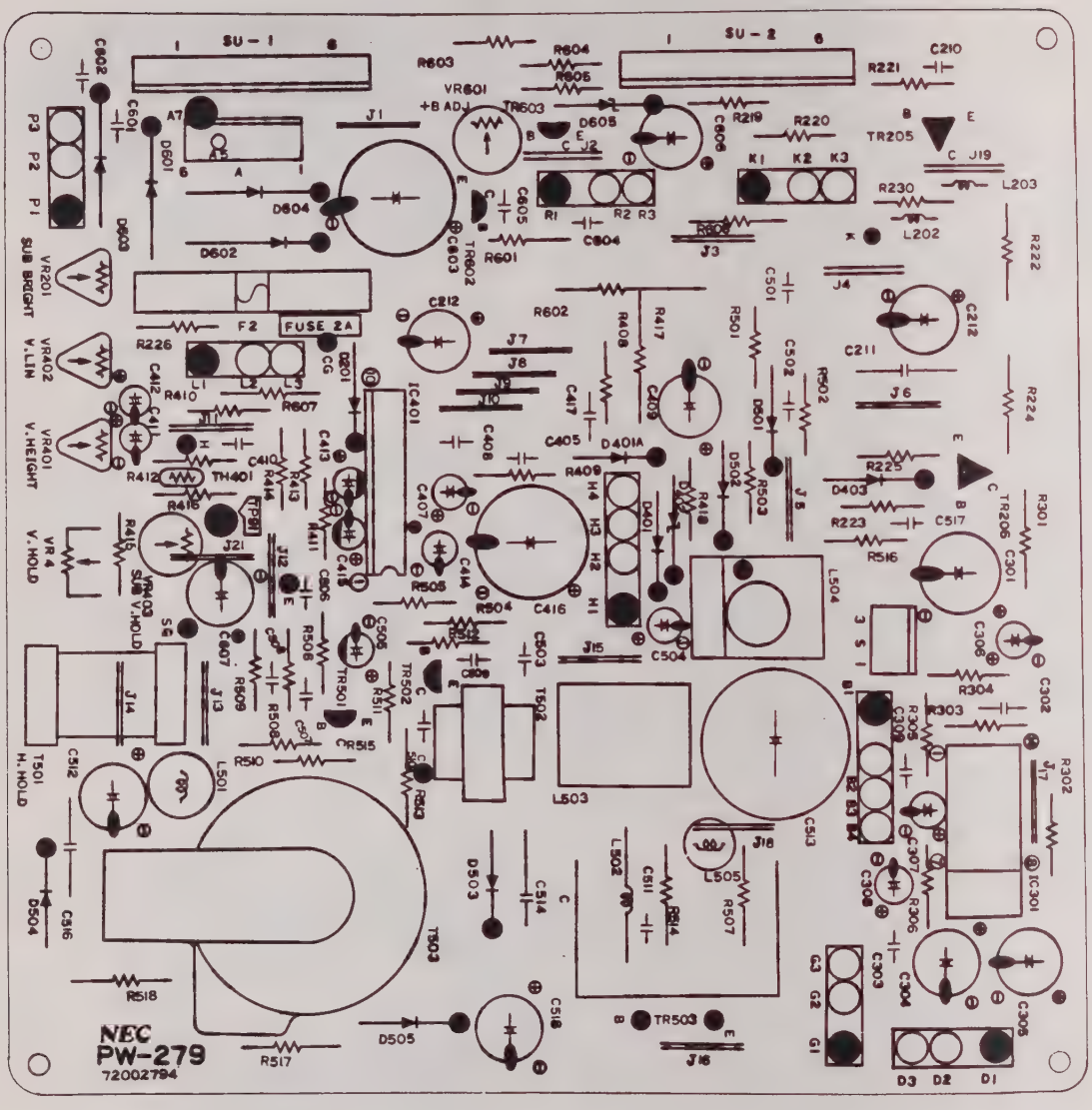


Figure B5-1. Main Printed Wiring Board Assembly PW-279 (Sheet 1 of 2)

b. Copper Side

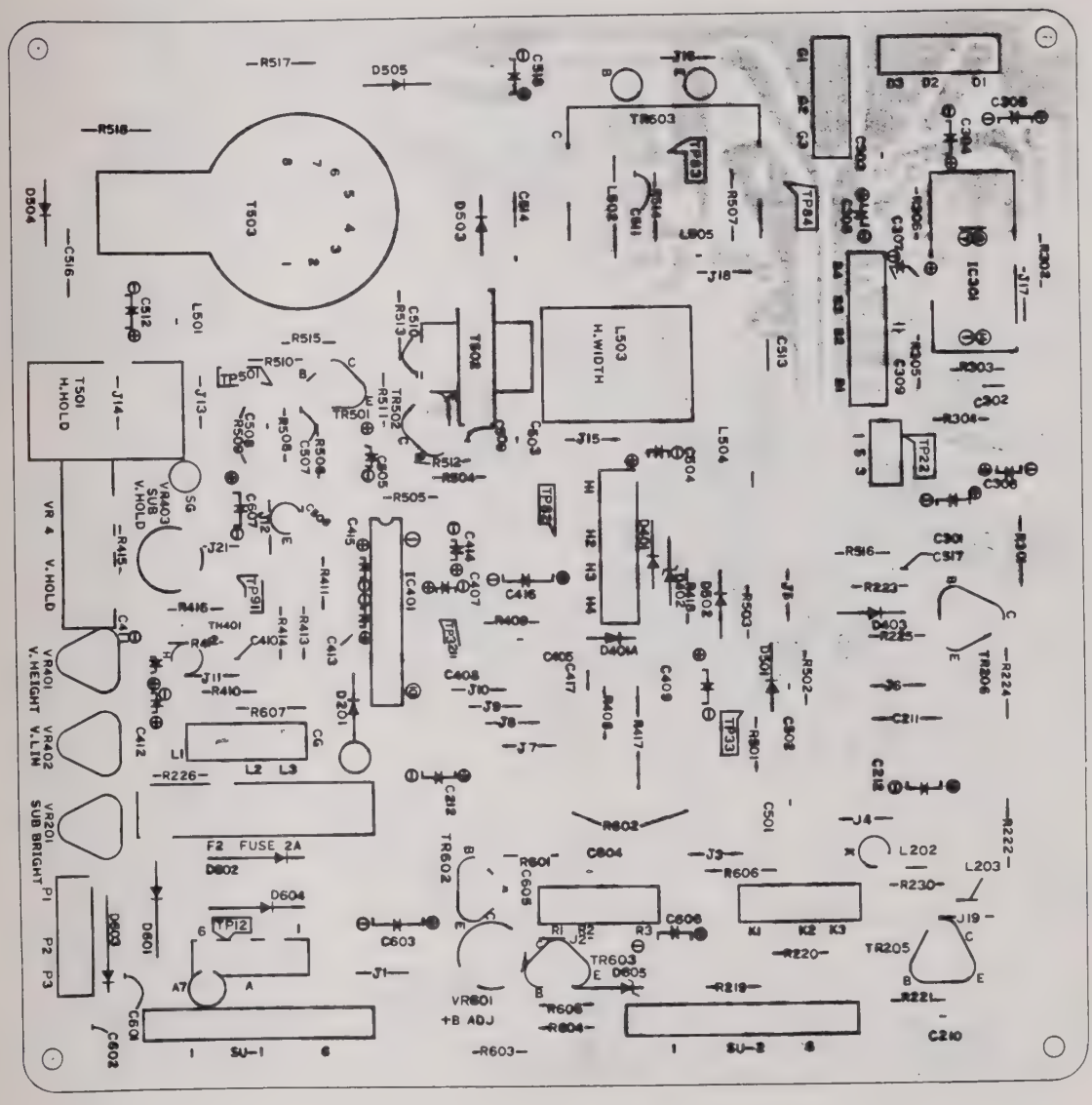
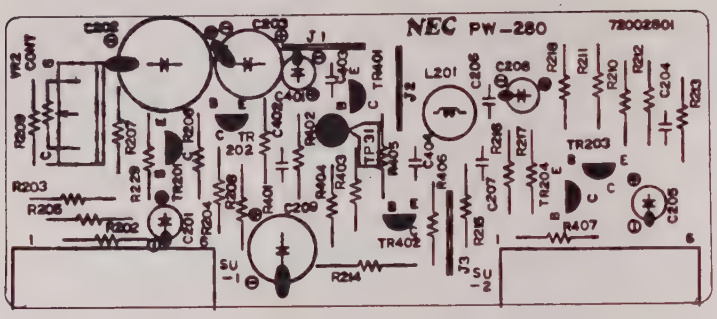


Figure B5-1. Main Printed Wiring Board Assembly PW-279 (Sheet 2 of 2)

a. Mounting Side



b. Copper Side

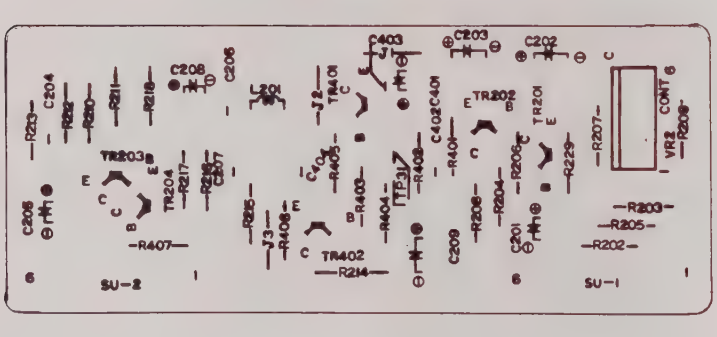
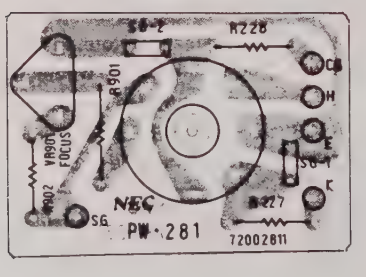


Figure B5-2. Video Printed Wiring Board Assembly PW-280

CRT PWB ASS'Y (PW-281)

a. Mounting Side



b. Copper Side

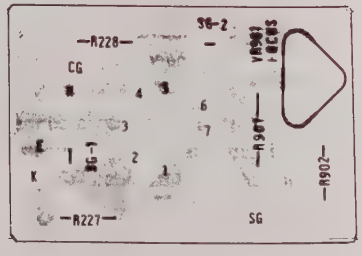


Figure B5-3. CRT Printed Wiring Board Assembly PW-281

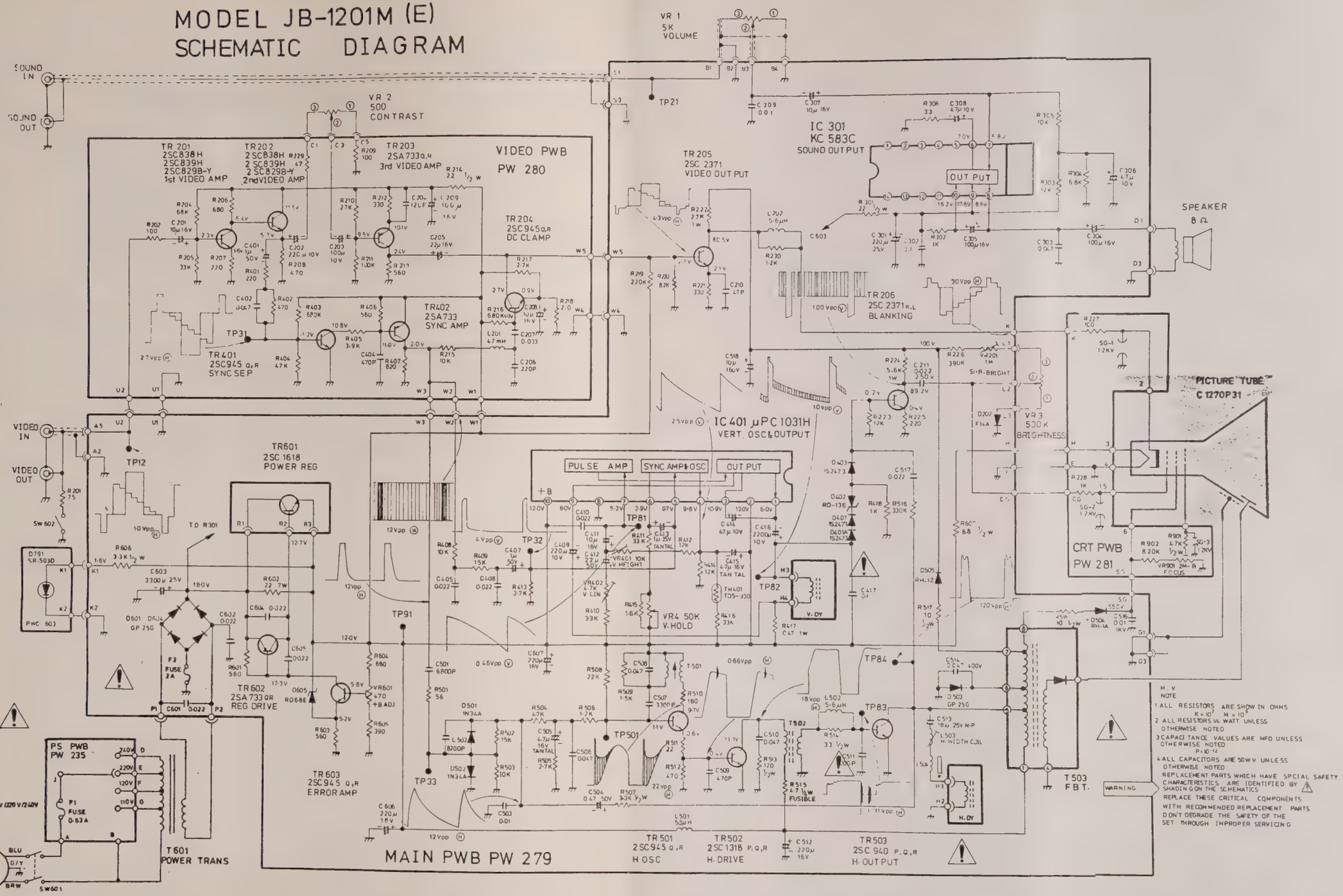


Figure B5-5. Data Display Model JB-1201M(E) Schematic Diagram

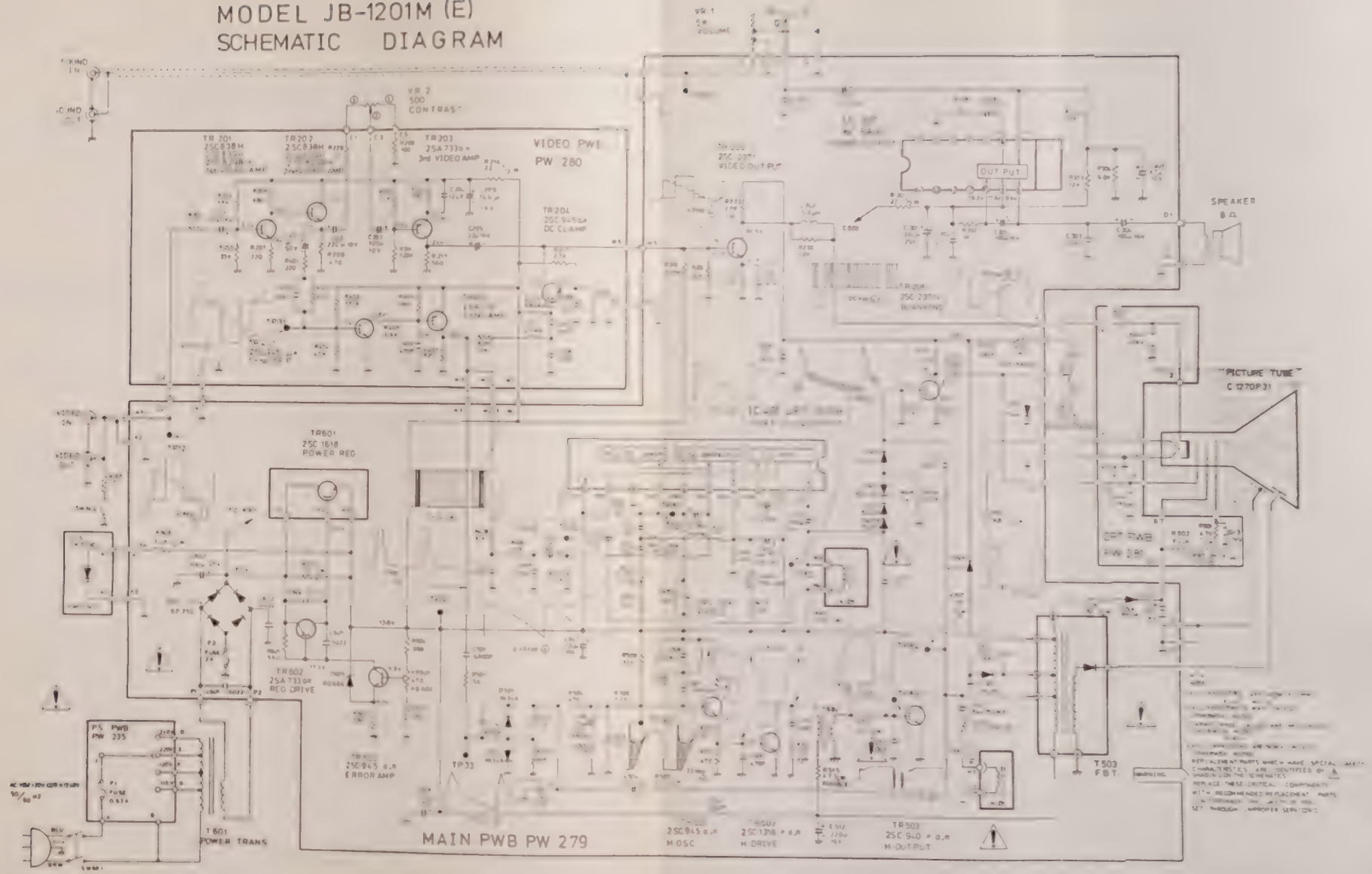


Figure B5-5. Data Display Model JB-1201M(E) Schematic Diagram

Section VI

Replacement Parts

B6-1 INTRODUCTION

This section provides information pertaining to the identification and ordering of repairable and replacement parts and assemblies of the SD426 Data Display. [Parts data for the SD425 Keyboard are not provided in recognition of the non-field repairable nature of the instrument]. When ordering a replacement part or assembly, be sure to provide a complete description including equipment model number, serial number and applicable options, along with the part or assembly number and reference number.

B6-2 PARTS LIST

Table B6-1 is reprinted from the OEM manual and is presented in order to provide the Scientific-Atlanta customer with the best possible information package related to the SD426 Data Display. Parts are listed in component order, starting with transistors and concluding with miscellaneous parts. In each component category, Table B6-1 notes the circuit symbol number of the individual part, the NEC Part Number, a description of the part, and the total quantity used. Refer to the schematic diagrams in B5-4 and B5-5 when identifying parts by symbol number.

Table B6-1. Replacement Parts List

WARNING: 1. Replacement parts which have special safety characteristics are identified by △ shading on the schematics, replace these critical components with recommended replacement parts. Don't degrade the safety of the set through improper servicing.

2. In the parts list the identification mark △ is attached to the symbol number or directly to the part name.

NOTE: Part Nos. are Nippon Electric Co., Ltd.

Table B6-1. Replacement Parts List (Sheet 1 of 5)

SYMBOL NO.	PART NO.		DESCRIPTION	Q'TY	REMARKS
	JB-1201M(A)	JB-1201M(E)			
Transistors					
TR203, 402, 602	35003517		Transistor, 2SA733/733A Q	3	
TR503	35046217		Transistor, 2SC940Q	1	
TR204, 401, 501, 603	35047217		Transistor, 2SC945 Q	4	
TR502	35050217		Transistor, 2SC1318Q	1	
TR206	35053812		Transistor, 2SC2371 (1) L	1	
TR601	35054200		Transistor, 2SC1618	1	
TR201, 202	35056112		Transistor, 2SC1675 L	2	
TR205	35056313		Transistor, 2SC2688 M	1	
Diodes					
D401, 401A, 403	36001009		Diode, 1S2473	3	
D501, 502	36002023		Diode, 1K34A	2	
D402	36003042		Zener diode, RD13E-B	1	
D605	36003060		Zener diode, RD6.8E	1	
D503, 601, 602, 603, 604	36107059		Rectifier, SI GP25G	5	
D201	36107075		Rectifier, SI F14A-P	1	
D505	36107164		Rectifier, SI RH-1Z	1	
D504	36107165		Rectifier, SI RH-1A	1	
D791	36801036		Diode Light-E SR503D	1	
ICs					
IC301	37001012		IC, KC583C (SND)	1	
IC401	37006004		IC, MP1031H (VERT)	1	
Electrical Parts					
TH401	38102018		Thermistor, TD5-330	1	
△ T601	45025104	45025812	Trans., Power	1	
△ T502	45802001		Trans., H. Drive	1	
△ T503	47304061		F.B.T.	1	
	48201053		△ Deflection Yoke	1	
L503	60908008		Coil, Width	1	

Table B6-1. Replacement Parts List (Sheet 2 of 5)

SYMBOL NO.	PART NO. JB-1201M(A)	PART NO. JB-1201M(E)	DESCRIPTION	Q'TY	REMARKS
L504	60917005		Coil, H. Linearity	1	
T501	60953006		Coil, H. OSC	1	
L202	61051514		Coil, Filter 5.6 μH	1	
L501	61064006		Coil, Filter	1	
L201	61064055		Coil, Filter 4.7 mH	1	
L502	61066014		Coil, Filter 5.6 μH	1	
	63001518		Speaker 77 mm 8Ω 0.8w	1	
⚠F2	66651404	66671005	Fuse 2A	2	
⚠F1	66652056	66671012	Fuse 0.6A	2	
SG-1, 2, 3	66705001		Spark Gap 1.2 kV	3	
	94929301		Video PWB Ass'y	1	
	94929402		CRT PWB Ass'y	1	
	94Y02101		Main PWB Ass'y	1	
	94Y02201		PS PWB Ass'y	1	

Picture Tube

⚠	5531259E	Pix. Tube C1270P31	1	

Controls

VR1	41001507	41001402	R, Variable	5kΩ	0.25w	1	
VR3	41053001		R, Variable	500kΩ	0.1w	1	
VR2	41053002		R, Variable	500Ω	0.1w	1	
VR901	41056108		R, Variable	2MΩ	0.5w	1	
VR4	41057272		R, Variable	50kΩ		1	
VR601	41061007		R, Variable	470Ω	0.15w	1	
VR402	41061611		R, Variable	4.7kΩ	0.1w	1	
VR401	41061612		R, Variable	10kΩ	0.1w	1	
VR201	41061620		R, Variable	1MΩ	0.15w	1	

Cabinet Parts

	24313971	24311911	Cabinet, Front	1	
	24313991	24314001	Cabinet, Back	1	

Knob

	24460931	Knob, Control	3	

Resistors

R514	40003007	R, Solid	3.3Ω	10%	1/2w	1	
R513	40003026	R, Solid	120Ω	10%	1/2w	1	
R507, 606	40003043	R, Solid	3.3kΩ	10%	1/2w	2	
R901	40003057	R, Solid	47kΩ	10%	1/2w	1	
R607	40003511	R, Solid	6.8Ω	10%	1/2w	1	
R517, 518	40003513	R, Solid	10Ω	10%	1/2w	2	
R214, 301	40003517	R, Solid	22Ω	10%	1/2w	2	

Table B6-1. Replacement Parts List (Sheet 3 of 5)

SYMBOL NO.	PART NO.		DESCRIPTION				Q'TY	REMARKS
	JB-1201M(A)	JB-1201M(E)						
R608	40023578		R, Solid	2.7MΩ	10%	1/2w	1	
R201		40102646	R, Carbon	75Ω	5%	1/4w	1	
R511		40106133	R, Carbon	22Ω	5%	1/4w	1	
R306	40106137		R, Carbon	33Ω	5%	1/4w	1	
R229		40106141	R, Carbon	47Ω	5%	1/4w	1	
R501		40106143	R, Carbon	56Ω	5%	1/4w	1	
R202, 209, 227		40106149	R, Carbon	100Ω	5%	1/4w	3	
R510		40106155	R, Carbon	180Ω	5%	1/4w	1	
R207, 218, 225, 401		40106157	R, Carbon	220Ω	5%	1/4w	4	
R212, 221		40106161	R, Carbon	330Ω	5%	1/4w	2	
R605		40106163	R, Carbon	390Ω	5%	1/4w	1	
R208, 402, 512		40106165	R, Carbon	370Ω	5%	1/4w	3	
R213, 406, 601, 603		40106167	R, Carbon	560Ω	5%	1/4w	4	
R206, 604		40106169	R, Carbon	680Ω	5%	1/4w	2	
R407		40106171	R, Carbon	820Ω	5%	1/4w	1	
R228, 302, 418		40106173	R, Carbon	1kΩ	5%	1/4w	1	
R230, 506		40106175	R, Carbon	1.2kΩ	5%	1/4w	2	
R509		40106177	R, Carbon	1.5kΩ	5%	1/4w	1	
R217, 413, 505		40106183	R, Carbon	2.7kΩ	5%	1/4w	3	
R410		40106185	R, Carbon	3.3kΩ	5%	1/4w	1	
R405		40106187	R, Carbon	3.9kΩ	5%	1/4w	1	
R504		40106189	R, Carbon	4.7kΩ	5%	1/4w	1	
R304		40106193	R, Carbon	6.8kΩ	5%	1/4w	1	
R215, 305, 408, 503		40106197	R, Carbon	10kΩ	5%	1/4w	4	
R223, 303, 412, 414		40106199	R, Carbon	12kΩ	5%	1/4w	6	
R409, 502		40106201	R, Carbon	15kΩ	5%	1/4w	2	
R508		40106205	R, Carbon	22kΩ	5%	1/4w	1	
R210		40106207	R, Carbon	27kΩ	5%	1/4w	1	
R205, 411, 416		40106209	R, Carbon	33kΩ	5%	1/4w	3	
R404		40106213	R, Carbon	47kΩ	5%	1/4w	1	
R415		40106215	R, Carbon	56kΩ	5%	1/4w	1	
R204		40106217	R, Carbon	68kΩ	5%	1/4w	1	
R220		40106219	R, Carbon	82kΩ	5%	1/4w	1	
R211		40106221	R, Carbon	100kΩ	5%	1/4w	1	
R219		40106229	R, Carbon	220kΩ	5%	1/4w	1	
R516		40106233	R, Carbon	330kΩ	5%	1/4w	1	
R226		40106235	R, Carbon	390kΩ	5%	1/4w	1	
R216, 403		40106241	R, Carbon	680kΩ	5%	1/4w	2	
R902		40106243	R, Carbon	820kΩ	5%	1/4w	1	
R602		40216035	R, Wire	22Ω	10%	7w	1	
R222		40351183	R, Metal	2.7kΩ	5%	1w	1	
R224		40351191	R, Metal	5.6kΩ	5%	1w	1	
R417		40404809	R, Metal	0.47Ω	10%	1w	1	
⚠R515		40811617	R, Fuse	4.7Ω	5%	1/4w	1	

Table B6-1. Replacement Parts List (Sheet 4 of 5)

SYMBOL NO.	PART NO. JB-1201M(A)	PART NO. JB-1201M(E)	DESCRIPTION	Q'TY	REMARKS
Capacitors					
C516	42019625		C, Ceramic 1kV 0.01μF	1	
C511	4202J513		C, Ceramic 50V 1000pF	1	
⚠ C601, 602, 604, 605	4211K429		C, Ceramic 50V 0.022μF	4	
C404,509	4213K209		C, Ceramic 50V 470pF	2	
C210	4231A037		C, Ceramic 50V 47pF	1	
C204	4231A047		C, Ceramic 50V 120pF	1	
C206	4231A053		C, Ceramic 50V 220pF	1	
C514	42703871		C, Film 400V 0.047μF	1	
C211	42739009		C, Film 250V 0.22μF	1	
C309	42754507	4275D007	C, Film 50V 0.01μF 20%	1	
C501	4275D006		C, Film 50V 0.0068μF	1	
C405, 408, 410, 517	4275D009		C, Film 50V 0.022μF	4	
C207	4275D010		C, Film 50V 0.033μF	1	
C510	4275D011		C, Film 50V 0.047μF	1	
C417	4275D013		C, Film 50V 0.1μF	1	
C507	4275D057		C, Film 50V 0.0033μF	1	
C502	4275D062		C, Film 50V 0.0082μF	1	
C503	4275D063		C, Film 50V 0.01μF	1	
C303, 402, 506, 508	4275D071		C, Film 50V 0.047μF	4	
C501	4275F006		C, Film 50V 0.0068μF	1	
C405, 408, 410, 517	4275F009		C, Film 50V 0.022μF	4	
C207	4275F010		C, Film 50V 0.033μF	1	
C518	43005120		C, Elec. 160V 10μF	1	
C306, 308, 414	43011015		C, Elec. 10V 47μF	3	
C202, 209, 409	43011017		C, Elec. 10V 220μF	3	
C416	43011021		C, Elec. 10V 2200μF	1	
C201, 208, 307, 411	43011028		C, Elec. 16V 10μF	4	
C205	43011029		C, Elec. 16V 22μF	1	
C203, 304, 305	43011032		C, Elec. 16V 100μF	3	
C512, 606, 607	43011033		C, Elec. 16V 220μF	3	
C301	43011048		C, Elec. 25V 220μF	1	
C401, 407	43011066		C, Elec. 50V 1μF	2	
C412	43011067		C, Elec. 50V 2.2μF	1	
C504	43013071		C, Elec. 50V 0.47μF	1	
C603	43099024		C, Elec. 25V 18μF	1	
C513	43399002		C, Elec. 25V 18μF	1	
C415, 505	43515053		C, Tantalum 16V 4.7μF	2	
C413	43515071		C, Tantalum 35V 1μF	1	
Miscellaneous Parts					
	24527021		Bracket, Trans	1	
	24527033		Heat Sink	1	
	24719431	24719441	Name Plate	1	
	24776032	24776041	Name Plate Instruction	1	
	24807261		Storage Box	1	

Table B6-1. Replacement Parts List (Sheet 5 of 5)

SYMBOL NO.	PART NO.		DESCRIPTION	Q'TY	REMARKS
	JB-1201M(A)	JB-1201M(E)			
	24807561		Bag, Polyethylene	1	
	24815801		Filler-L, Carton	1	
	24815811		Filler-R, Carton	1	
	24815821		Bag, Polyethylene	1	
	24818191	24818741	Carton Box	1	
	70031026		Socket, CRT	1	
	71110140	71110125	Terminal Board	1	
	71205036	71205037	Holder	4	
	71501018		Terminal	6	
	⚠70800301		Line, Cord	1	
	73741134		Connector 4((H)	1	
	73759135		Connector 5P (C) 2.5 mm	1	
	73769005		Connector Pin 6P	1	
	73769104		Connector 6P (A) 2.5 mm	1	
	74001802		Heat Sink MPC1031H	1	
	74002611		Heat-H, Sink	1	
	74900281		Insulator D	1	
	⚠75599053		Line Cord	1	
	78017251		Instruction Book	1	
	78069631	78069641	Label, Schematic Diagram	1	

Scientific-Atlanta Service Information

Scientific-Atlanta has sales and service centers around the world. In addition, an international network of sales representatives is available to assist you anywhere in the world.

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Customer Support

At Scientific-Atlanta, we are committed to supporting the instruments we sell. This philosophy is demonstrated through a world-wide sales and service organization which provides a variety of services to our customers.

Service Centers

Scientific-Atlanta maintains a network of service centers around the world. These centers are staffed and equipped to handle most maintenance requirements. In addition, the service center can provide technical assistance on problems related to the application, operation, or maintenance of our products.

- Service representatives are factory trained on each product.
- Specialized knowledge and test equipment is available to provide local repair with minimum downtime.
- The service representatives have the experience to provide on-site calibration and maintenance of individual instruments or entire systems.

To insure continued customer satisfaction, each service center is equipped to provide several types of service:

Warranty Service

Each Scientific-Atlanta manufactured instrument is tested and inspected to conform to its published specifications and to be free of defects in materials and workmanship. Scientific-Atlanta will repair or replace products which prove to be defective within the warranty period. Detailed warranty information is included in the applicable instrument instruction manual. For more information, contact the Scientific-Atlanta office nearest you.

If an instrument develops a defect within the warranty period, contact your Scientific-Atlanta service center. Your Service Representative will help determine the best course of action for effecting the repair of your equipment; all without parts or labor expense to you.

Annual Service Agreement

An annual service agreement is an economical and effective way to assure continued high instrument performance. Periodic scheduled maintenance and calibration is the best insurance against equipment failure. It is a cost-effective means of preventing expensive production interruptions or delays in development programs. You are assured of timely, competent service without the expense of maintaining in-house maintenance capability, specialized test equipment, and replacement parts inventories.

Some of the outstanding advantages of an Annual Service Agreement are:

- Regularly scheduled maintenance and calibration.
- Reduced labor rates — approximately 20% saving over unscheduled field service.
- Quick response on emergency service — normally within 48 hours.
- Facilitates maintenance budgeting.
- Minimizes paperwork — one purchase order covers the entire year.
- On-site service of instruments or entire system — reduces downtime, eliminates problems related to sending individual instruments to the calibration laboratory.

Field Service

Field Service is available to assist you with stubborn maintenance problems, installations, and other technical problems. If field service is required, contact your Scientific-Atlanta service center.

In-House Service

In some cases it is more efficient or cost effective to return equipment to our service center. Your Service Representative will gladly work with you to determine when this is necessary and will provide you with shipping instructions.

Replacement Parts

Each service center maintains inventories of most replacement parts for current standard products. In most cases, emergency orders for parts, printed circuit boards, subassemblies, and supplies can be filled within 24 hours. Ordering parts from Scientific-Atlanta provides you with a single source of supply and assurance of part compatibility.

When ordering parts from Scientific-Atlanta, please provide a description, part number, model number, and serial number.

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